

SHARP

TECHNICAL MANUAL TECHNISCHE ANLEITUNG

VHS VIDEO CASSETTE RECORDER **VHS** VIDEOCASSETTEN-RECORDER

**For VC-D801/D802 SERIES [PAL]
DER VC-D801/D802 SERIE [PAL]**

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INHALT

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SHARP CORPORATION

VCD801X, SB, H/VCD802GB digital circuit Service Manual Materials

[1] Introduction

In the VCD801X, SB, and H/VCD802GB, the video signals are digitally processed with the states of the Y signal, R-Y signal, and B-Y signal component signals and the following modes of processing are carried out using the special video memories (0.375 Mbits×3).

1-1 Digital modes

- 1) TV still
- 2) Playback still
- 3) Stroboscope
- 4) 2-picture
- 5) Channel search (9-picture)

1-2 Digital processing specifications

- 1) A/D conversion sampling frequencies

R-Y, B-Y : 2.5MHz

Y : 10 MHz

(R-Y and B-Y are sampled alternately with a 5-MHz sampling clock.)

- 2) Resolution

Y: 6 bits

R-Y: 6 bits

B-Y: 6 bits

- 3) Memory capacity

Y: 0.75 Mbits

R-Y : 0.1875 Mbits

B-Y : 0.1875 Mbits

} 0.375 Mbits

[2] Component type digital signal processing

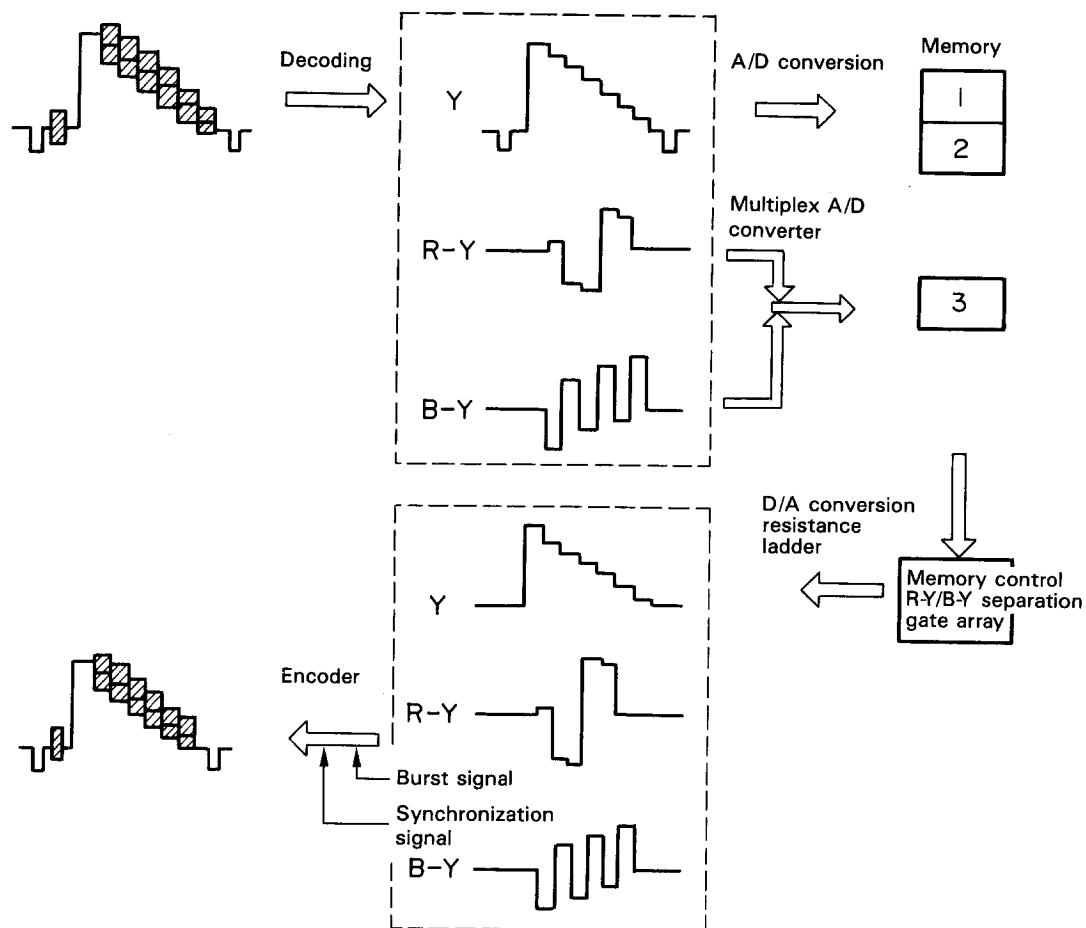


Figure 2-1 Flow of Digital Signal Processing

Figure 2-1 shows, the first step of digital signal processing is for the chroma decoder and low pass filter to convert the video signal into R-Y, B-Y, and Y signals. The converted R-Y and B-Y signals are converted into 6-bit digital data by an A/D converter with time multiplexing at a 5-MHz sampling rate. The Y signal

is converted into 6-bit digital data with a separate A/D converter with a 10-MHz sampling rate. The R-Y and B-Y data is written into one memory and the Y data is written alternately into two memories (No. 1 and No. 2, see Fig 2-1). This memory is controlled with the video memory control as shown in Figure 2-2.

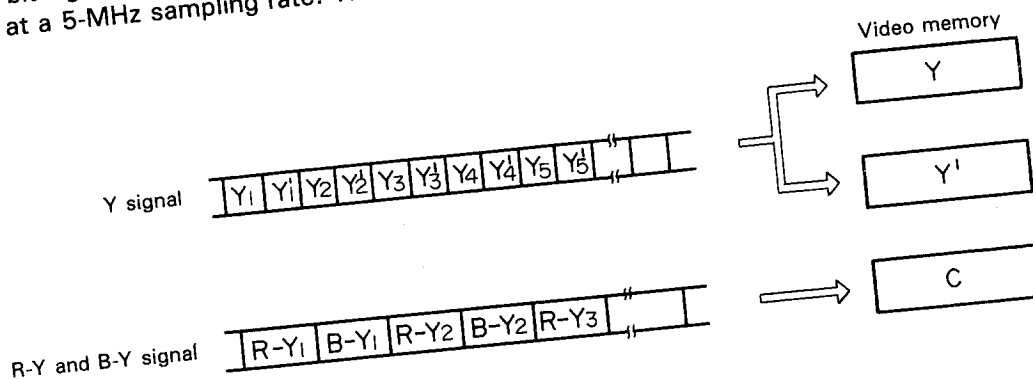


Figure 2-2 Relationship between Digital Data and Memory

Next, the data read out from the memory is input to the video memory control IC to separate R-Y and B-Y and compound Y and Y' and output them. These signals

are converted into the Y, R-Y, and B-Y analog signals with the D/A conversion R-2R resistor ladders.

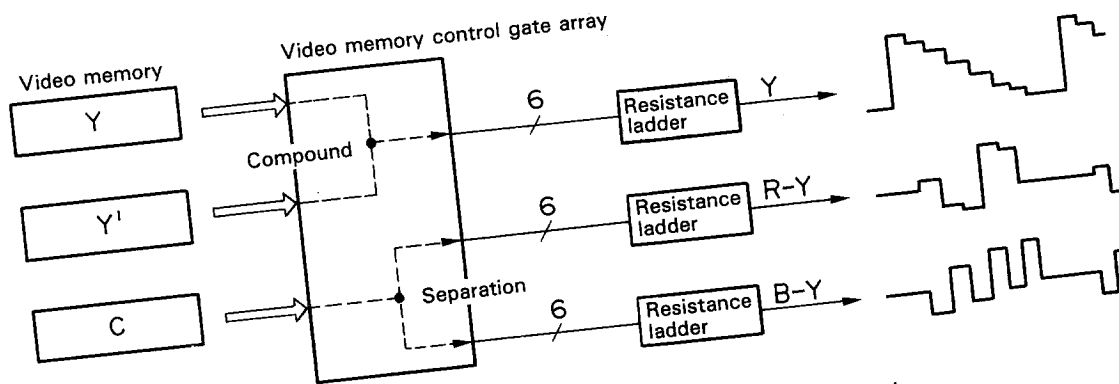


Figure 2-3 Digital-to-Analog Conversion from Memory Output

The color signals that have been digitally processed in this way are converted into PAL signals by the chroma encoder LSI and output through the video output switch.

[3] Digital modes

The digital mode is determined by the serial data (shown in Figure 3-2) that the video memory control gate array receives from the system control microcomputer.

(1) TV still

After one field of video signals are written to memory, reading continues.

(2) Playback still

The tape is fed normally. After one field of video signals are written to memory, reading continues and at the same time, the tape feed is paused.

(3) Stroboscope

Memory writing and reading is repeated in a fixed cycle, giving a frame-feed video output.

(4) 2-picture

This mode superimposes one video signal on another. The sources for the main screen and the secondary screen are the playback Video signal and Tuner video signal (or Auxiliary video signal). The main and secondary screens can be reversed and the position of the secondary screen can be moved.

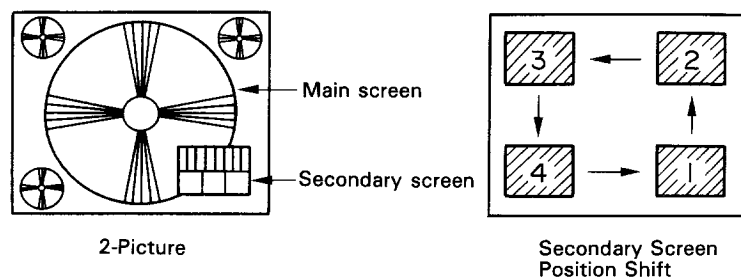


Figure 3-1 2-Picture Mode

In this case, only the secondary screen is digitally processed and superimposed on the main screen, which is not digitally processed. Since the sources for

these two signals are not synchronized, the secondary screen must be digitally processed to synchronize it with the main screen.

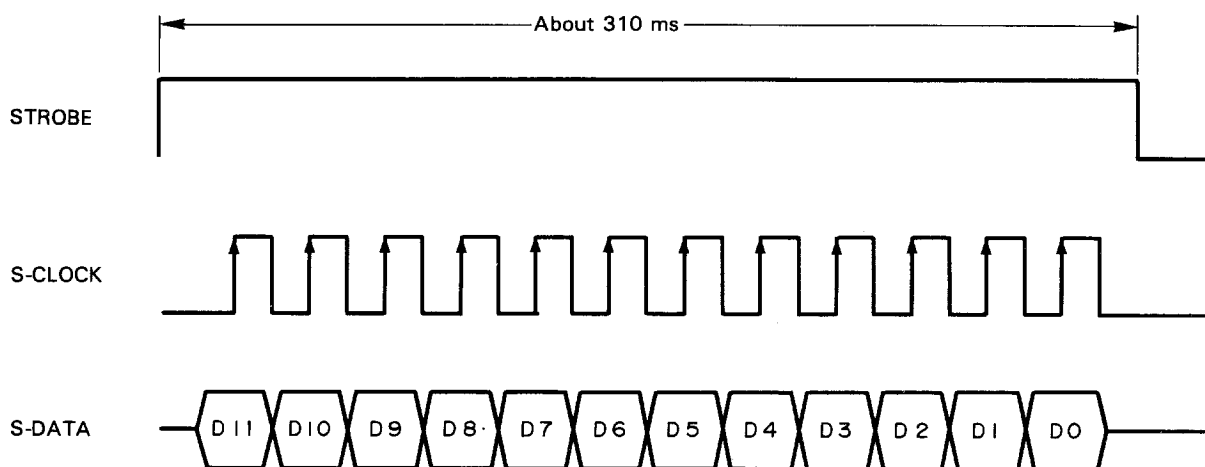


Figure 3-2 Video Memory Control LSI Input Serial Data Format

D0 : iP 0
D1 : iP 1
D2 : iP 2
D3 : iP 3
D4 : Multi/P in P
D5 : Multi
D6 : Digit On (H)^{*1}
D7 : MASTER (H)^{*2}
D8 : INSERT (H)^{*3}
D9 : SKEW (H)^{*4}
D10 : MODE 1
D11 : MODE 2

	9-Pic	2-Pic	TV still/strobe
Multi/P in P	H	H	L
Multi	H	L	L

	9-Pic	PB still	Others
SKEW	H	H	L

*1: Digital mode switch
*2: Main screen switch
*3: Secondary screen switch
*4: X'tal clock mode

1	2	3
4	5	6
7	8	9

Screen display position

	iP0	iP1	iP2	iP3
1	L	L	L	L
2	H	L	L	L
3	L	H	L	L
4	L	L	H	L
5	H	L	H	L
6	L	H	H	L
7	L	L	L	H
8	H	L	L	H
9	L	H	L	H

Screen position specification data

* D10 and D11 are not used. They are always low.

The video memory used in this system comprises separate built-in input and output line memories. Since they can be operated asynchronously, the main screen and secondary screen can be synchronized by trans-

ferring the secondary screen data with the data writing synchronized with the secondary screen and the data read out synchronized with the main screen.

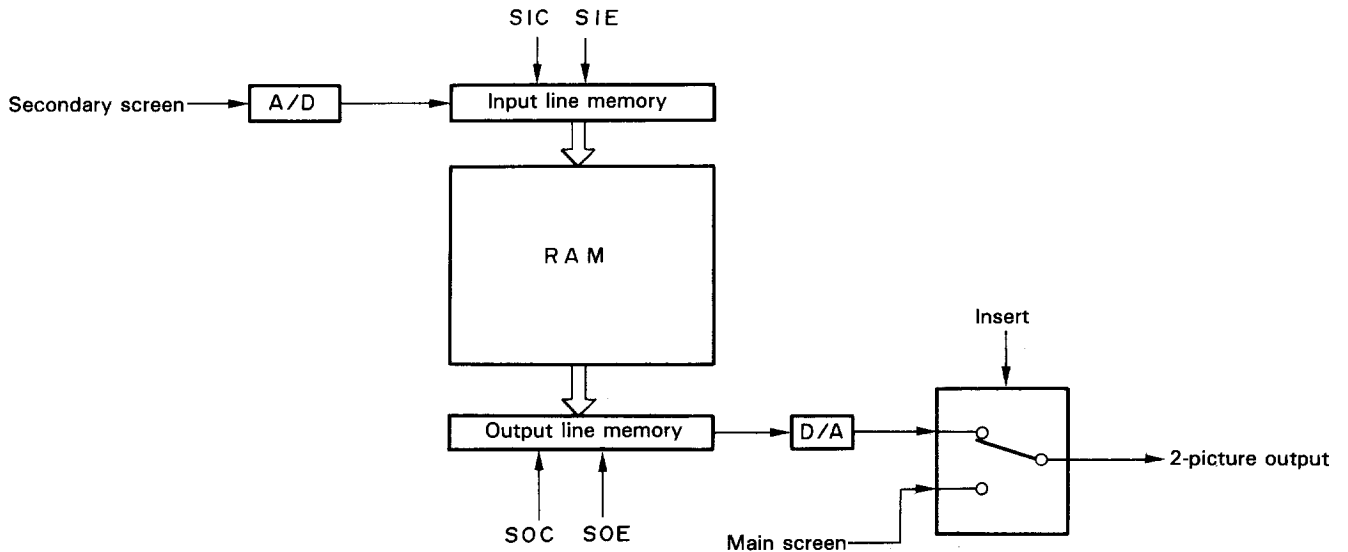


Figure 3-3 Digital Processing for 2-Picture Mode

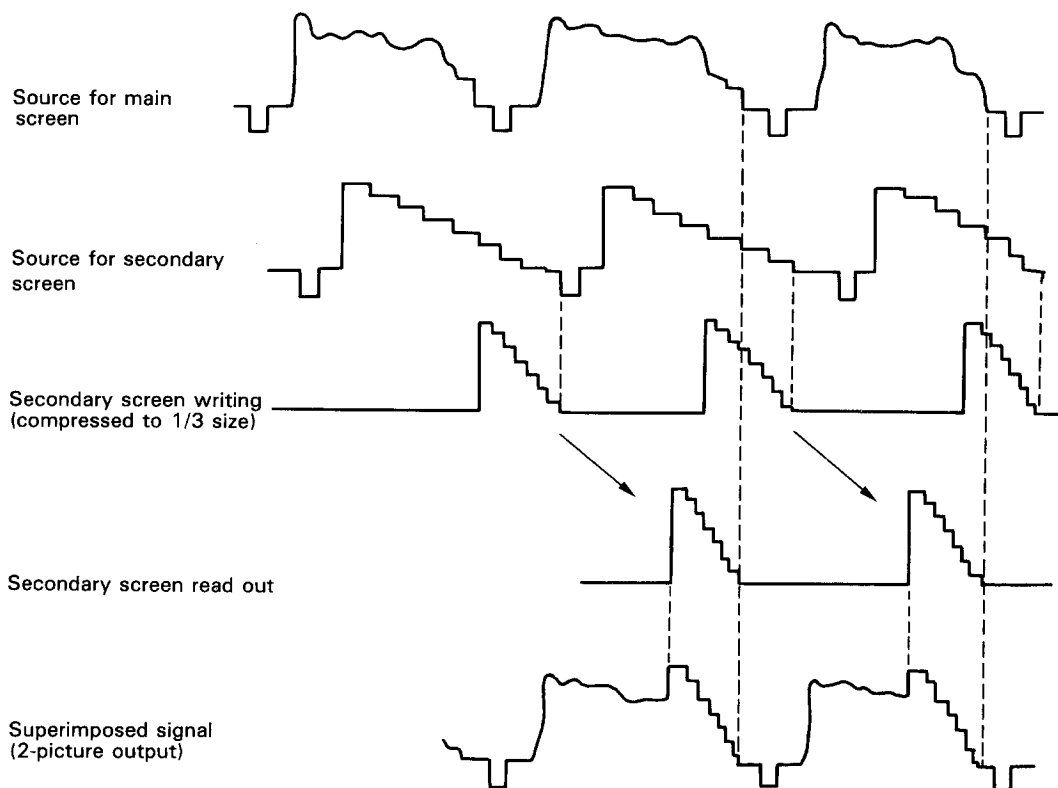


Figure 3-4 2-Picture Mode Wave Form

Next, we will discuss the method with which the secondary screen is compressed to 1/3 size in each direction, i.e. 1/9 size. After the R-Y, B-Y, and Y signals are converted from analog to digital, the memory serial input clock (SIC) is set to 1/3 its normal frequency and the horizontal data is cut to 1/3 of normal. The

screen is compressed in the vertical direction by only writing video signals for the secondary screen into memory once every 3H. The result is that the signals output from memory have been compressed to 1/3 size.

(5) Channel search/9-picture mode

This mode searches in order all the channels tuned, writes them into memory, and shows up to 9 channels on a single screen. During the channel search the

screen background is blue. Each time a channel is found, that channel is added to the screen.

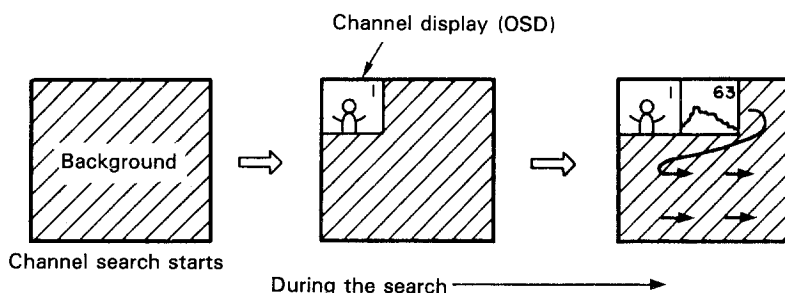
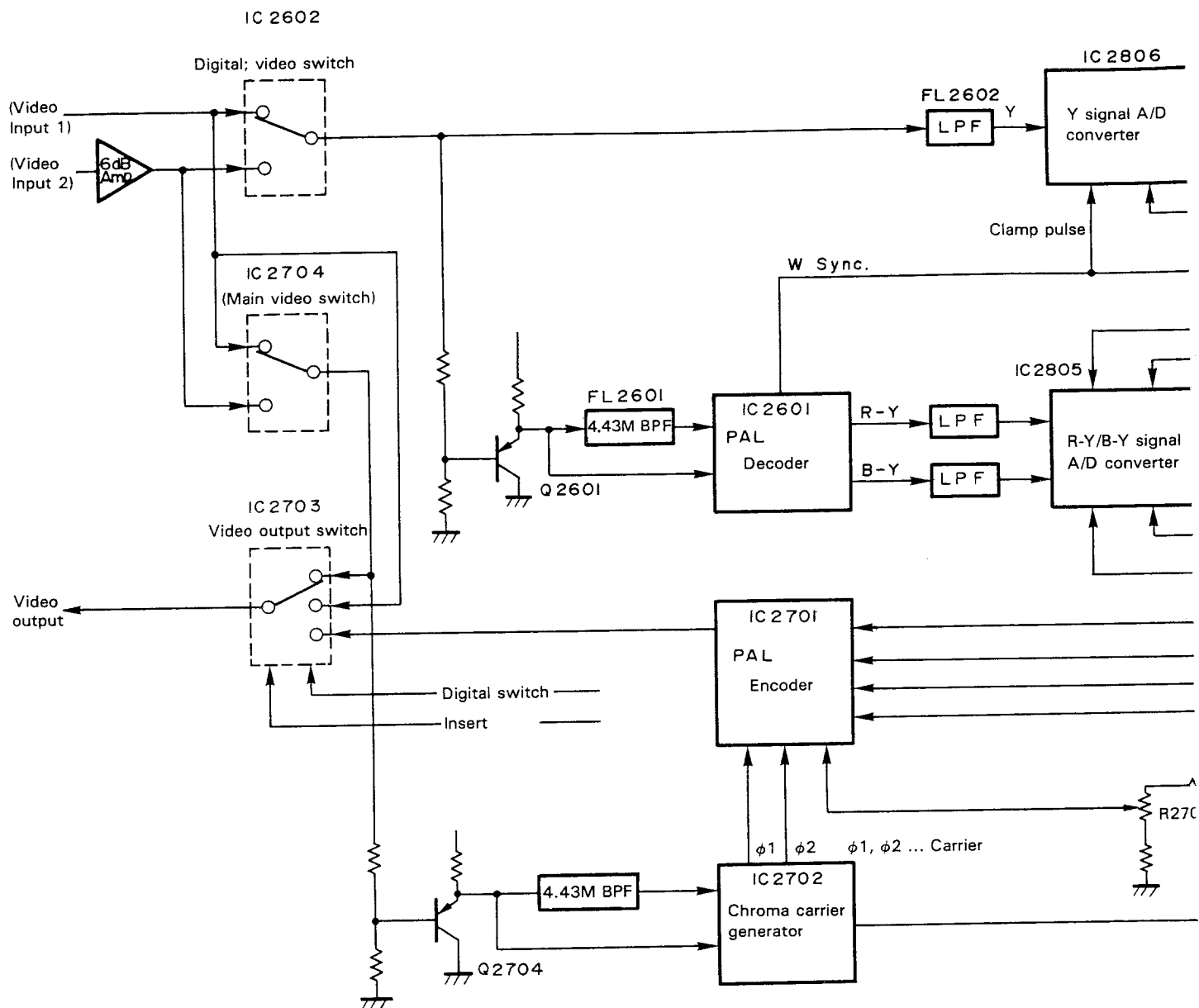


Figure 3-5 Channel Search

The channel display is superimposed on the video signals written into memory by the OSD (on screen display) LSI. The picture for each channel is compressed

to 1/3 size in each direction with the same method as is used for 2-picture mode.



Digital Circuit B

Figure

(2) OSD LSI operations

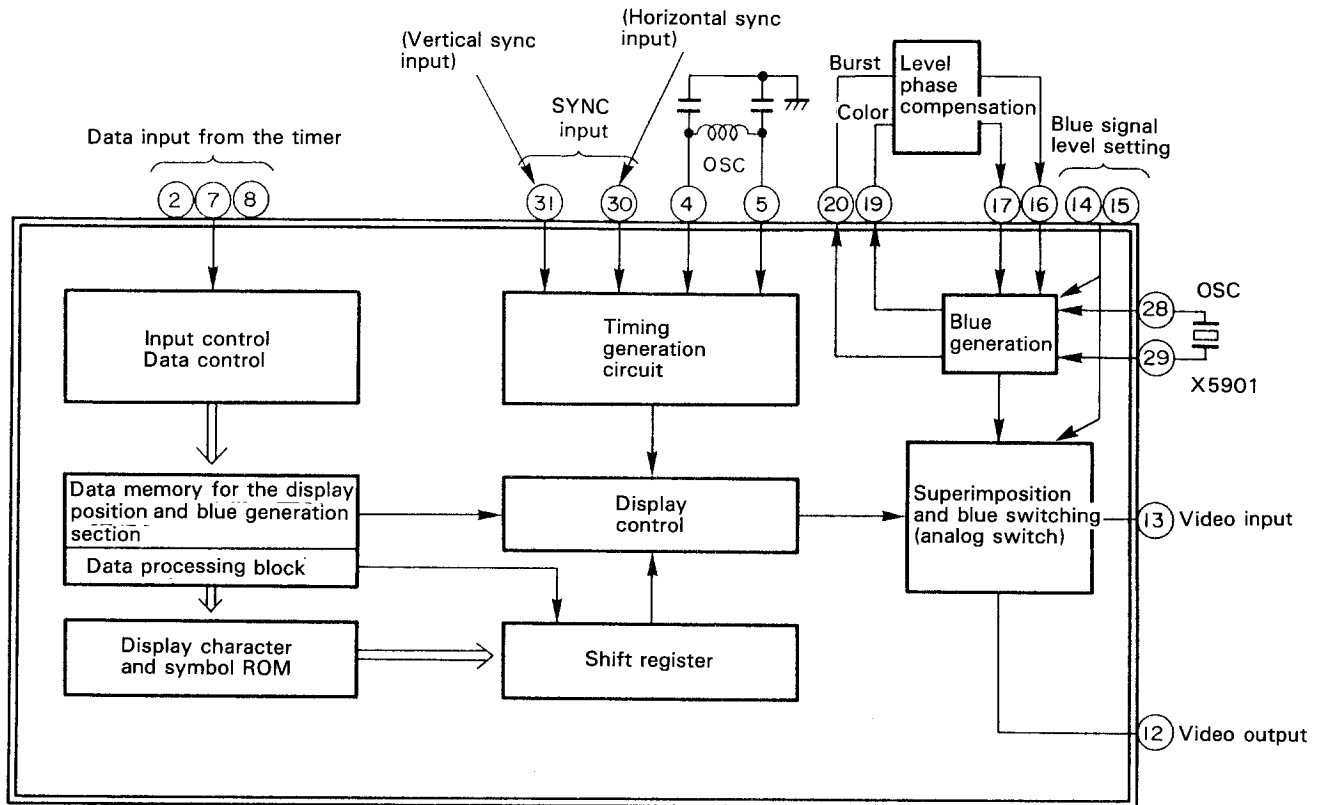


Figure 5 Internal Block Diagram of the OSD IC5901

Here is an explanation of the basic operations of the OSD. We will look at how the characters and symbols are arranged, how they are synchronized with the

video signal, and how characters and symbols are arranged in the desired position on the video signals.

The OSD IC (IC5901) is controlled by the serial signal from the timer. The serial data from the timer includes the following two types of data:

- ① Position data
- ② Character data

The position data specifies a position on the screen with the screen divided as shown in Figure 6 into 10 rows and 24 columns. The character data specifies what is to be displayed in the row specified by the position data. Since the character data also includes blanks, if a character is to be shown in the 3rd column, the character data is blank, blank, character. In other words the character data also specifies the column the character is to be shown in.

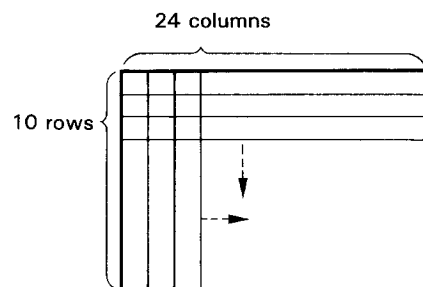


Figure 6 Screen Partitions

OSD (On Screen Display) Service Manual Materials

Functions

To display the contents of timer recording on the television screen with letters, numbers, and symbols using the special LSI for controlling the character pattern display on the TV screen.

Circuit block diagram

(1) System block diagram

First, in order to understand the overall connections of the circuits, look at the large circuit block diagram in Figure 4.

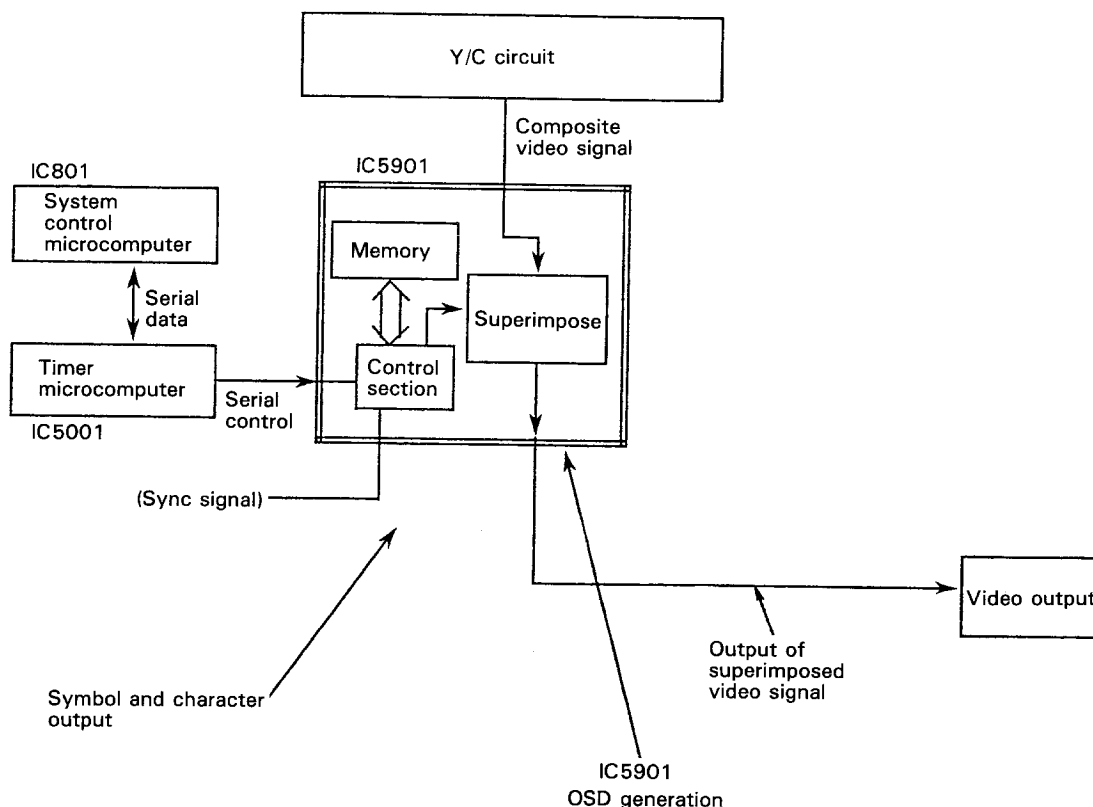
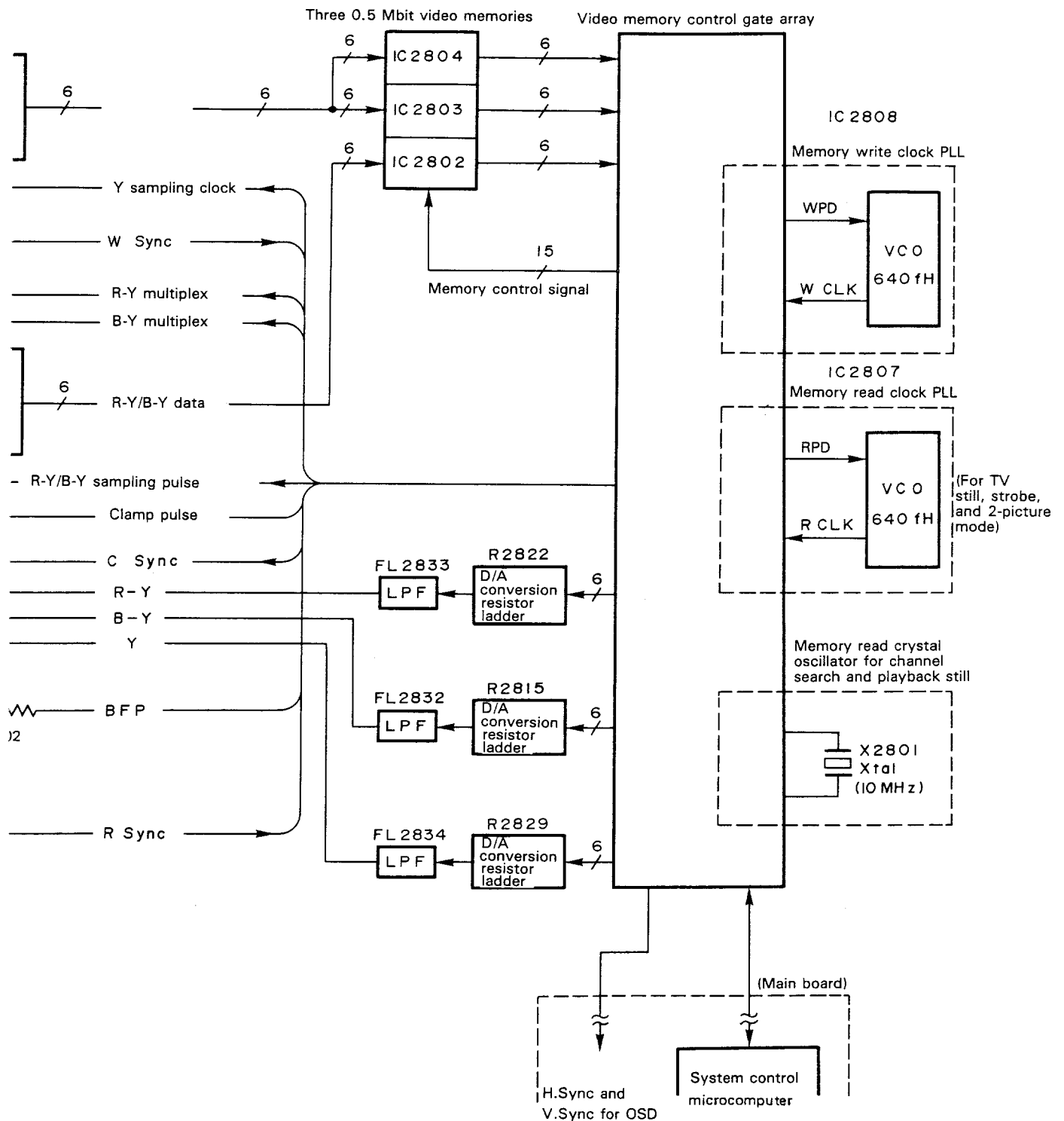


Figure 4 OSD System

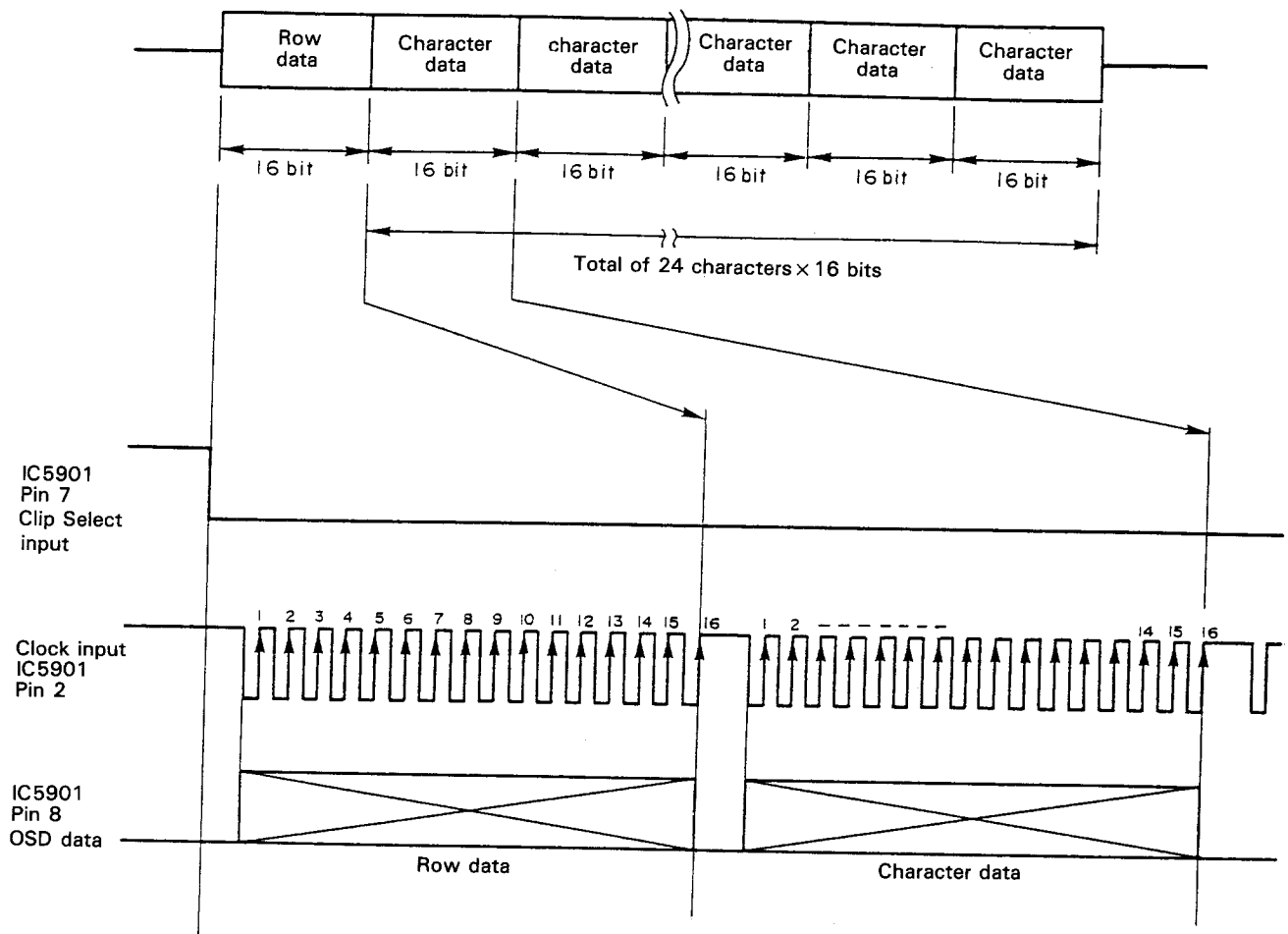
The OSD system is controlled by the serial signals from the timer microcomputer. The OSD is generated by IC5901. Characters and symbols are stored in this ROM. The serial signals read out the desired character or symbol, specify the layout, and fit the character or symbol into the composite video signal input from the Y/C circuit. In this case, the position of the character or symbol on the screen is also set in the ROM in IC5901, but the horizontal position and size are controlled with the external oscillator. The horizontal synchronization signal and vertical syn-

chronization signal input from the outside become the standard for the position. The OSD generation circuit is one function of IC5901. It also uses the background signal output to generate the blue background. The blue background is switched on and off by the serial data from the timer. The blue background is output by replacing the regular signal with the blue background in the superimposed circuit in IC5901. Superimposed onto the blue background is also carried out in this section.



Block Diagram

Here is a timing chart for 1 row of data.



Note: Since the clock input is made with the timer software, the synchronization duty cycle is not fixed.

Next, we will discuss the row data. The row data is specified with the address that positions the leftmost of the 10×24 dot screen partitions. There is an ad-

dress for each of the partitions in the 10 rows by 24 columns, so there are a total of 240 different addresses.

Row data	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13	14	15	16	17
	18	19																						2F
	30																							47
	48																							5F
	60																							77
	78																							8F
	90																							A7
	A8																							BF
	CO																							D7
	D8	D9	DA	DB																				EF

(Center omitted)

The address is a two-digit hexadecimal number.

As has already been made clear, what characters are to be displayed where is completely controlled with the serial data from the timer. In other words, the details of the display, i.e. what character to write where, is all written in the ROM in the timer. The OSD IC has the function for displaying this on the TV screen (according to the commands from the timer).

Next, we will explain the synchronization of the video signals and character signals and the determination of the position for insertion into the video signal. As explained earlier, even if the character array and position is determined, if those signals are not synchronized with the video signal into which they are to be inserted or the timing is off, then they cannot be superimposed correctly. That is why IC5901 has functions for synchronizing the character signals with the video signals and matching the timing. These functions correspond to the timing generation and display control block in Figure 5.

• Synchronization

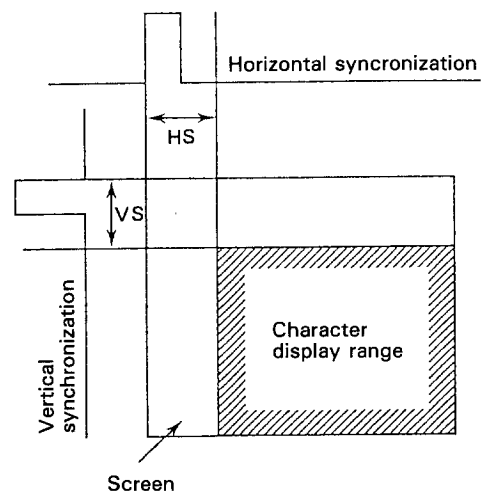
The OSD signals are synchronized with the video signals by horizontally and vertically synchronizing the OSD signal standards. The horizontal synchronization and vertical synchronization signals used are obtained by splitting them off from the video signals currently being shown on the screen. Therefore, if there is noise or dropouts in the video signal, the OSD display is disturbed.

• The size of characters

One character is a collection of 24 dots wide by 18 dots tall. The size of the characters is controlled by varying the number of pixels per dot. This is also prescribed by the serial data from the timer. In normal mode, 1 dot is 1H tall by 1Tc ($T_c = 1/7 \text{ MHz}$)* wide.

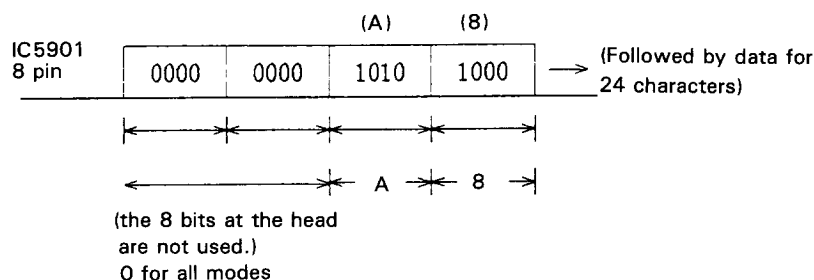
• Timing

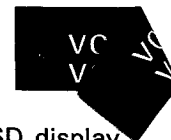
The OSD IC operates with the timing shown below. The horizontal synchronization and vertical synchronization signals are prescribed by the serial data from the timer. The horizontal synchronization is generated by counting with a counter the output of the oscillator connected to Pins 4 and 5 of the OSD IC. The number of stages for this counter is specified with the serial data from the timer. The horizontal synchronization value is always the same: about $13 \mu\text{s}$ (oscillation frequency 7 MHz). The vertical synchronization signals are generated by counting the horizontal synchronization signals. The same as for horizontal synchronization, the number of stages is set with the serial data from the timer, but this value is always the same. The vertical synchronization = 55H.



* This is the oscillation frequency for the oscillator connected to Pins 4 and 5 of the OSD IC.

For example, the row address for the 8th row is specified this way:





Data for one character after another for a total of 24 characters is sent to the row specified in this way. This is how data for a row is transferred. As explained already, since a blank is sent when nothing at all is

to be displayed, even if there is no OSD display the row at all, the row is specified, then 24 blanks are sent.

• Character data

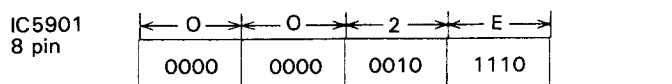
A total of 112 characters are written in the internal ROM. The codes for all the characters are determined. Here are these codes:

H/L	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	1	2	3	4	5	6	7	8	9		-	/	.	TH	'
1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	Q	R	S	T	U	V	W	X	Y	Z	T	W	SU	TU	WE	'A'
3	—		T		W	X	-H-	F	R-	A-		LP	LP			
4	SO	MO	DI	MI	DO	FR	SA	S	U-	M	O-	T	W	E-	AM	PM
5	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
6	q	r	s	t	u	v	w	x	y	z	+	*	=	'O'	'U'	///
7	DA	TU	M	LE	N	G	TH	:	-	WEE	K	L	Y			

Lower 4 bits

Upper 4 bits

The character codes are all 16 bits, but the character code is made from 8 of those bits. The other 8 bits are not used and are always all 0s. For example, when the character "WE" is output, the character data is :



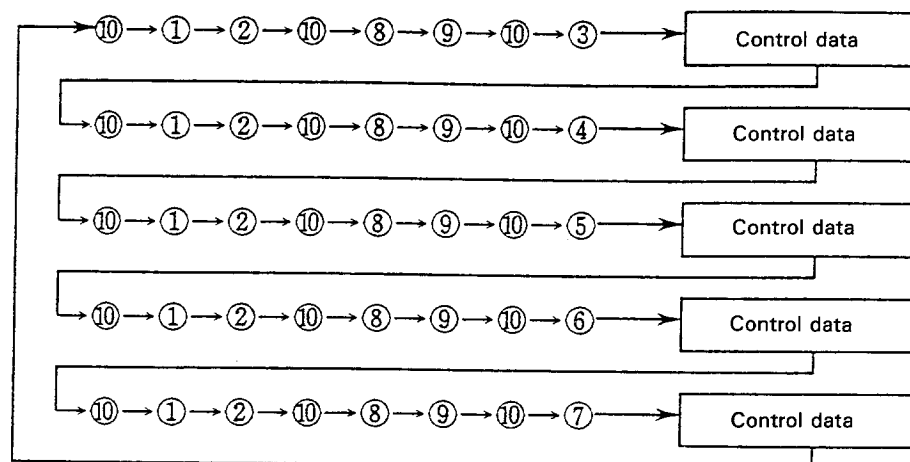
That is how the starting character position and the size of the characters is determined, but as explained earlier this is all prescribed by the serial data from the timer. This serial data is transferred with a fixed interval between the character data. This transfer timing will be discussed later.

• Generating the blue background screen

The generation of the blue background screen is also controlled by the serial data from the timer. This serial data includes a data item that selects blue background, OSD, or normal, brilliance data, and color data. In this case, the composite video signals are produced with the 17.73-MHz oscillator connected to Pins 28 and 29 as the oscillator. Since the 4.43-MHz burst signal is also generated from here, note that the precision of the 17.73-MHz signal also affects the coloring.

• Serial data

The control data is a total of 48 bits: 16 bits for the vertical position and character size, 16 bits for the horizontal position and character size, and 16 bits for the blue background control. Here is the timing this data is output with:



①-⑩: character code data for Rows 1-10

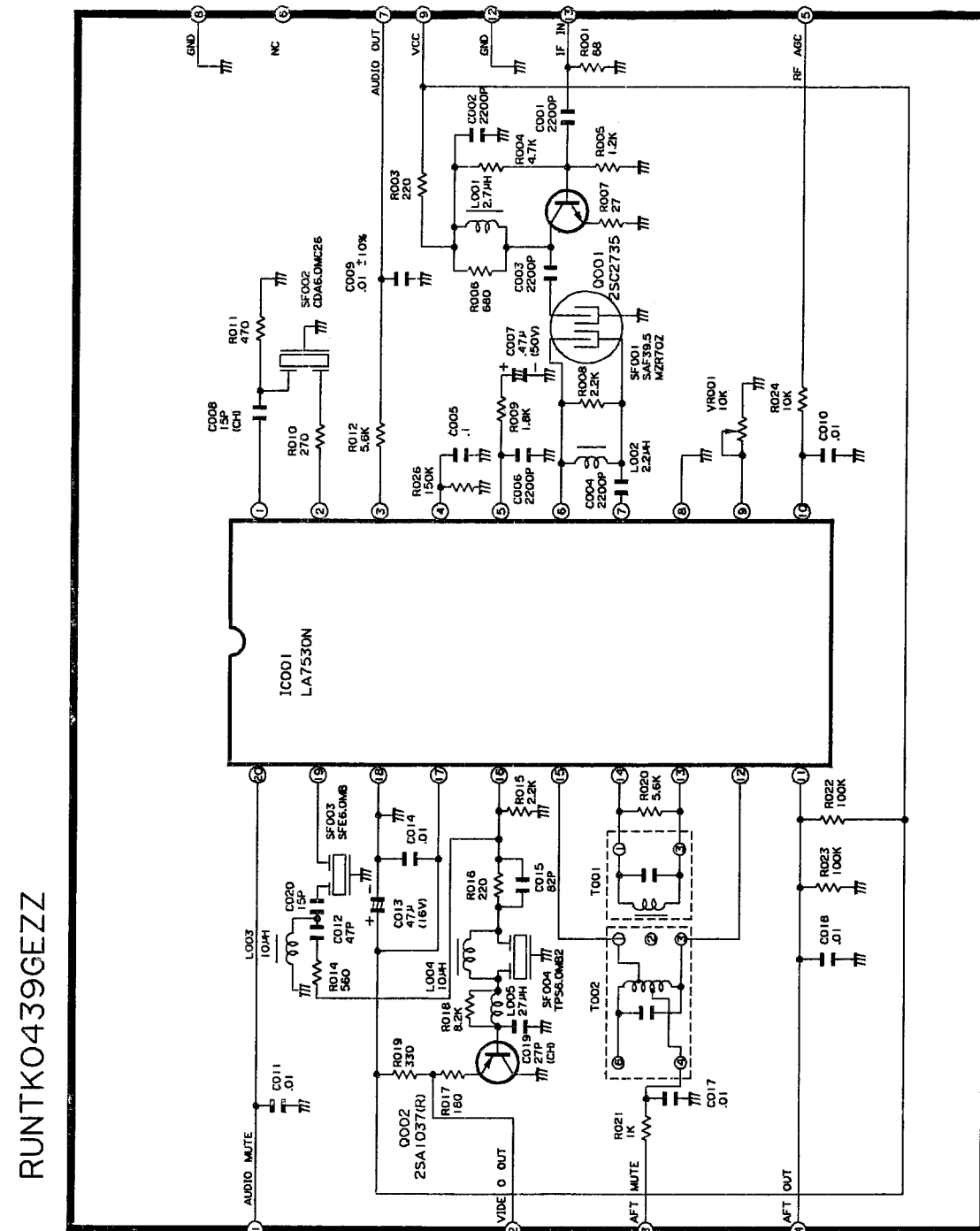
Control data: data to control such display parameters as the display position, character size, superimpose/blue background switch

Terminal functions

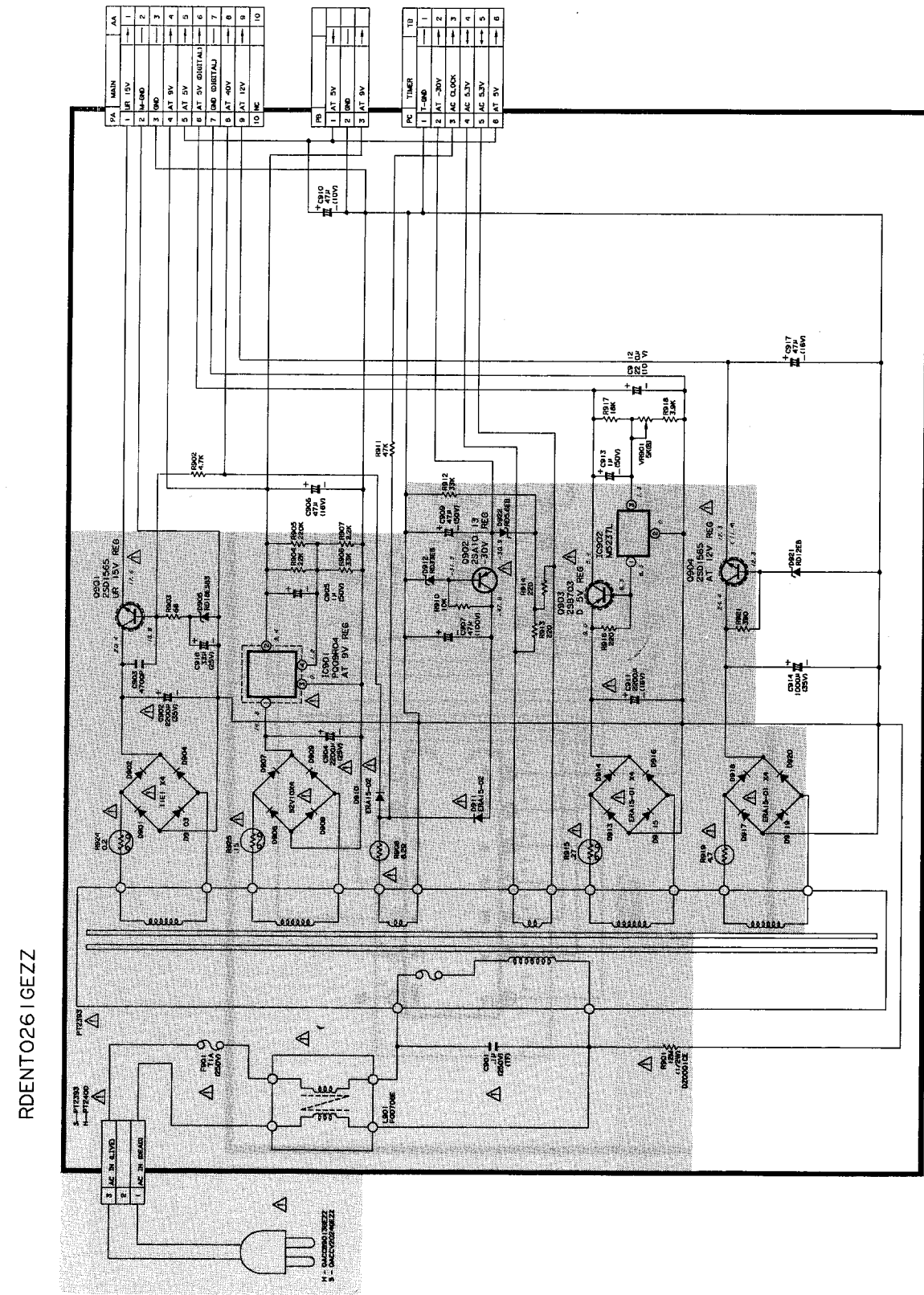
Pin number	Code	Pin name	Function
1	Vss 1	Ground pin	Digital system ground pin
2	SCK	Serial clock input	When ⑦ pin is low, OSC data (⑧ pin) is taken in at the rising edge of OSC CLOCK (② pin); hysteresis input.
3	\overline{AC}	ALL-clear input	When this signal is low, the internal circuits of the IC are reset; built-in pull-up resistor, hysteresis input.
4 5	OSC 1 OSC 2	External oscillator circuit pins	These are the pins the oscillation circuit for display is connected to. The standard oscillation frequency is about 7 MHz. This oscillation frequency determines the TV screen horizontal direction display position and the character width.
6	N/\overline{P}	NTSC/PAL switch input	This pin is the input pin for the signal switching between NTSC and PAL synchronization signal generation. When this signal is high, NTSC synchronization is used; when this pin is low, PAL synchronization is used. This pin is connected to a built-in pull-up resistor.
7	\overline{CS}	Chip select input	This is the chip select signal input pin. When serial data is transferred, the signal at this pin is low.
8	SIN	Serial data input	This is the pin through which the display control register and display data memory data and address are input serially.
9	PAOUT	Parity output	Odd parity output; error detection for one bit in 1 word of OSC DATA.
10	SYEX	Synchronization signal switch input	This is the input pin for the signal switching between internal and external synchronization. When the signal at this pin is high, synchronization is external; when it is low, synchronization is internal. This pin is connected to a built-in pull-up resistor.
11	Vss 2	Ground	This is the analog system ground. Connect it to ground.
12	CVIDEO	Composite video output	This is the output pin for the composite video signal. It outputs a 2 Vp-p composite video signal. During superimposition, the character output is piled onto the CVIN signal.
13	CVIN	Composite video in	This is the input pin for the composite video signal.
14	LERK	Blanking level	This is the input pin for the signal that determines the video signal blanking level.
15	LECHA	Character level input	This is the input pin for the signal that determines the character output level in the video signal.

Pin number	Code	Pin name	Function
16	CBIN	Colour burst signal input	The signal from ⑳ pin is converted to the colour burst signal level for the video signal with an external circuit and input to this pin.
17	RSIN	Character background carrier colour signal input	The signal from ⑲ pin is converted to the carrier colour signal level for the video signal with an external circuit and input to this pin.
18	VDD 2	Power pin	The +5V power for the analog system is connected to this pin.
19	RS	Character background carrier colour signal input	This pin outputs the carrier colour signal for the character background colour. A signal is output with a phase angle relative to the colour burst signal. The amplitude of this signal is 5 V.
20	CB	Colour burst signal output	This pin outputs the colour burst signal, 3.58 MHz for NTSC or 4.43 MHz for PAL. The amplitude of this signal is 5 V.
21	YM*	Brilliance signal output	This is the output pin for the brilliance signal.
22	BLNK*	Character background output	This is the output pin for the character background signal.
23	CO*	Character output	This is the output pin for the character signal.
24	B*	Blue output	This is the output pin for the blue signal
25	G*	Green output	This is the output pin for the green signal.
26	R*	Red output	This is the output pin for the red signal.
27	CSYN	Composite synchronization signal output	This is the output pin for the NTSC-format or PAL-format composite synchronization signal. The polarity of this signal is negative and the amplitude is 5 V.
28 29	OSCOU OSCIN	Oscillation circuit for synchronization signal generation	These are the pins to which the external oscillation circuit for generating the synchronization signals is connected. The oscillation frequency is 14.32 MHz for NTSC and 17.73 MHz for PAL.
30	HOR*	Horizontal synchronization signal input	This is the input pin for the horizontal synchronization signal; hysteresis input.
31	VERT*	Vertical synchronization signal input	This is the input pin for the vertical synchronization signal; hysteresis input.
32	VDO	Power pin	The +5V power for the digital system is connected to this pin.

INTERMEDIATE FREQUENCY TUNER CIRCUIT WIRING SIDE PWB

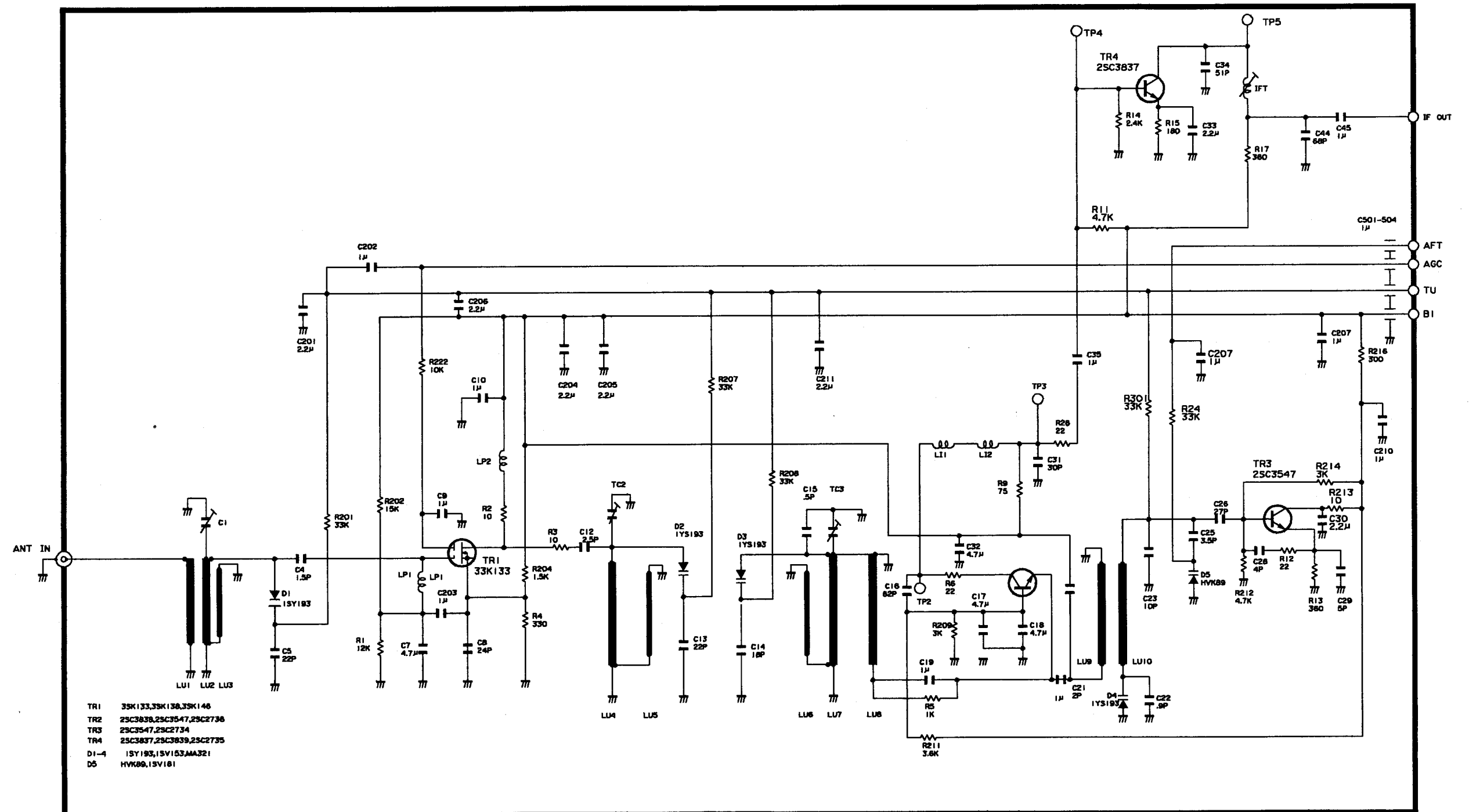


PWB-P, POWER CIRCUIT SCHEMATIC DIAGRAM

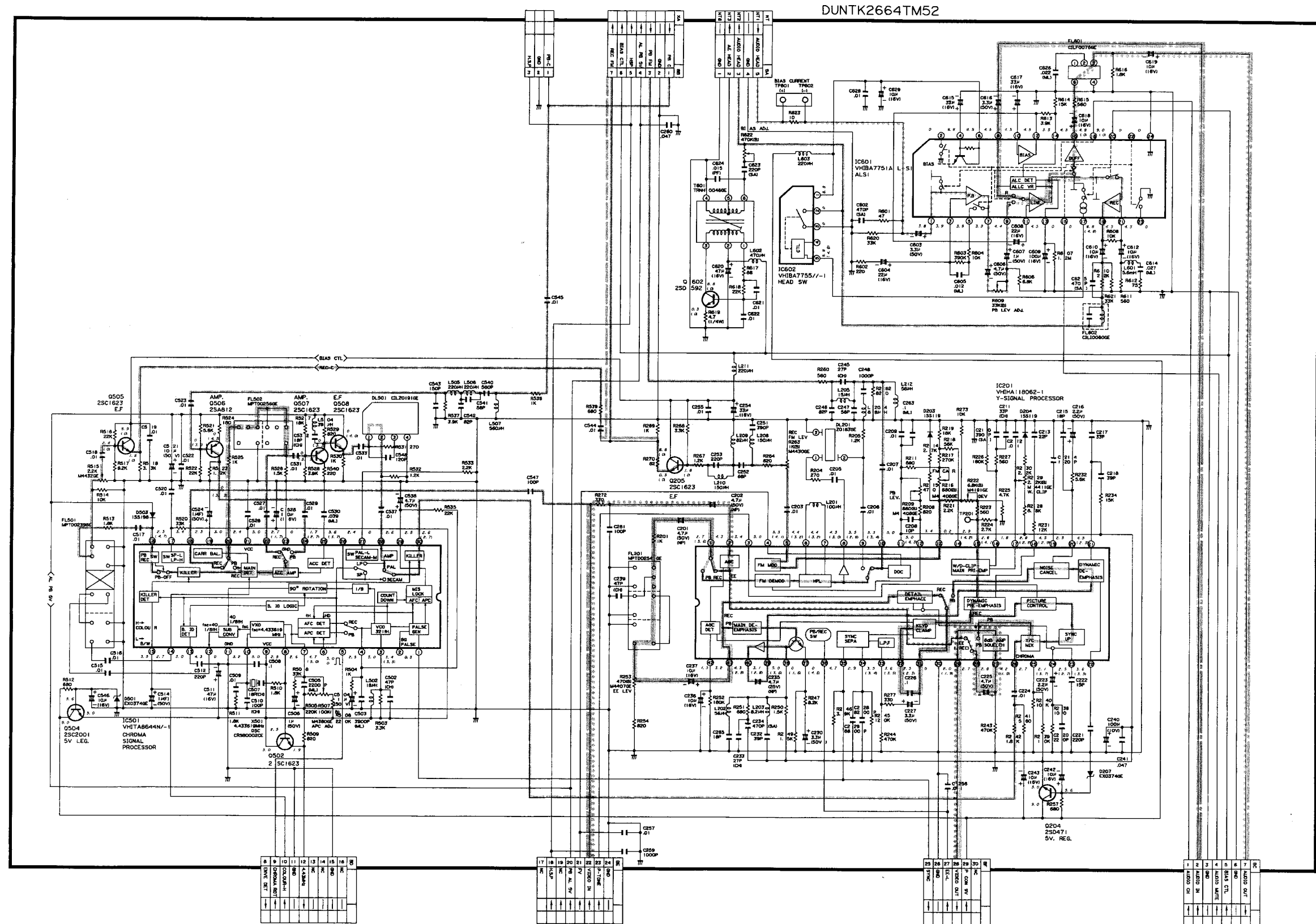


TUNER SCHEMATIC DIAGRAM

VTUATEMB1-015

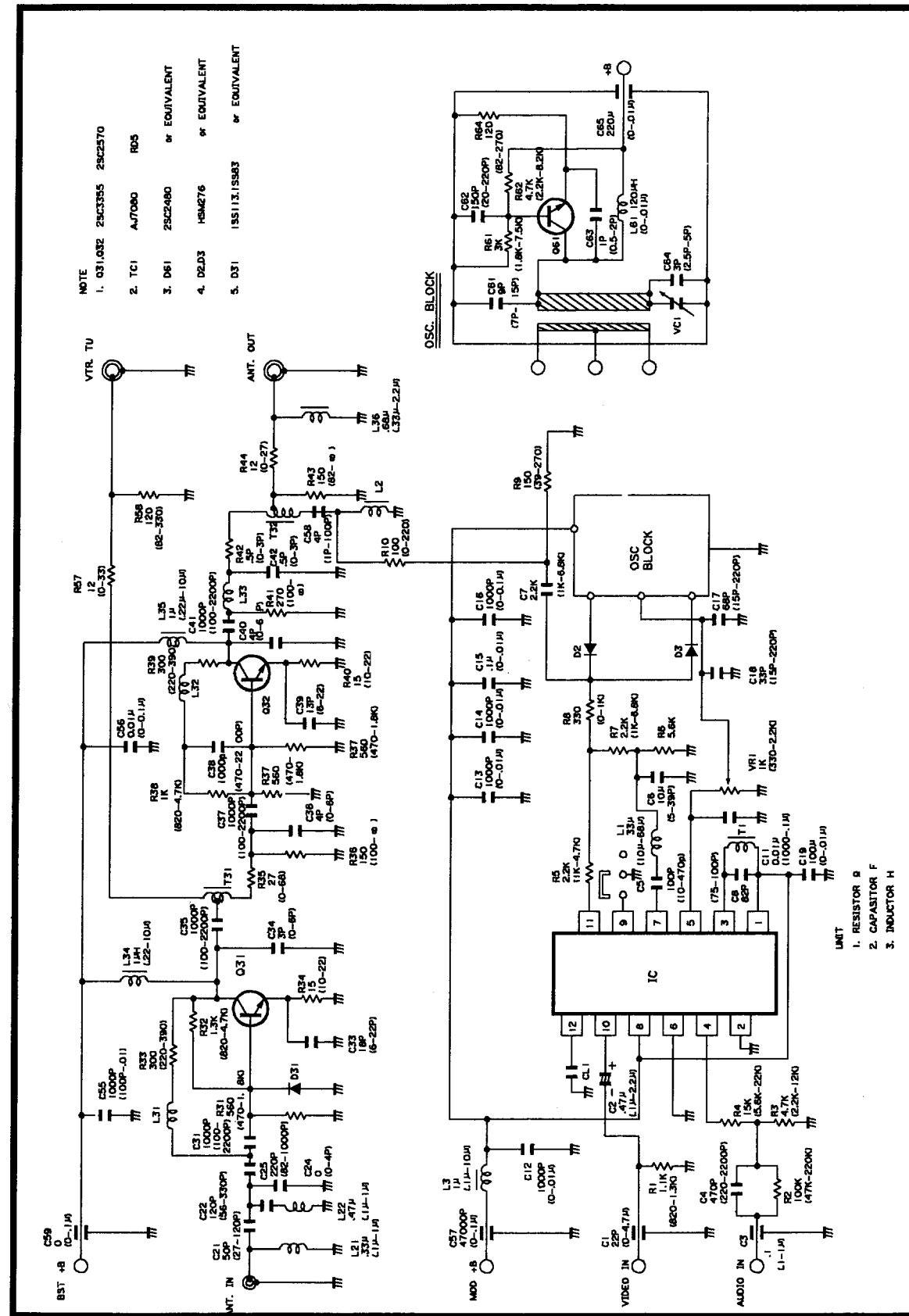


PWB-B, Y/C AUDIO CIRCUIT SCHEMATIC DIAGRAM



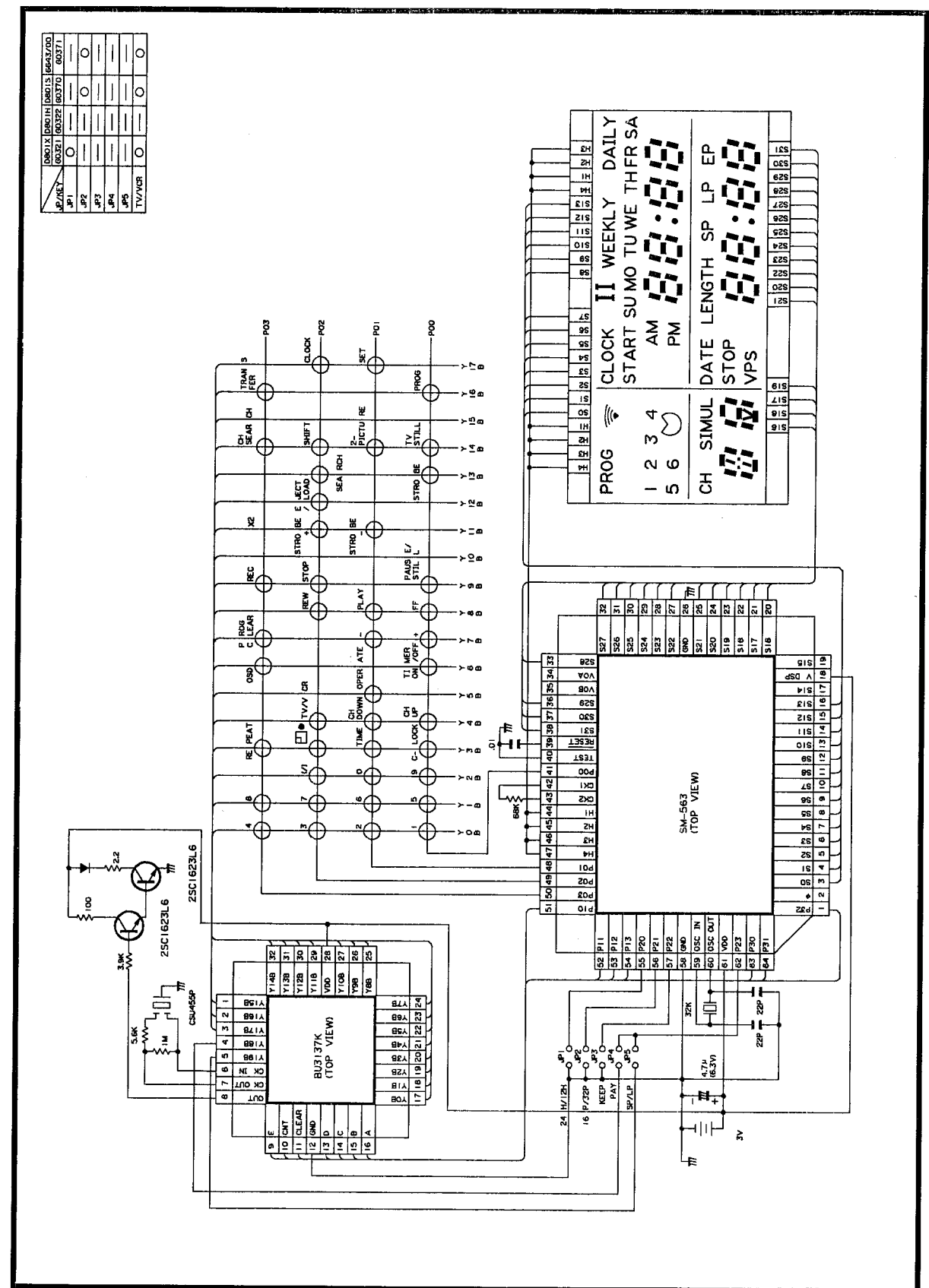
RF CONVERTER SCHEMATIC DIAGRAM

RCNVRO011GEZZ



RRMCG0322GESA

REMOTE CONTROL CIRCUIT SCHEMATIC DIAGRAM



ADJUSTMENT OF ELECTRICAL CIRCUITRY

Prior to the adjustment:

Most of the electrical adjustments are required after mechanical parts (video head included) have been replaced. Check that all the mechanical functions are normal before attempting adjustment of the electrical circuits.

Electrical adjustments require proper troubleshooting. After repair or parts replacement the following alignments may be required.

Note:

In the table below, instruments, test points and instrument readings are listed in this order.

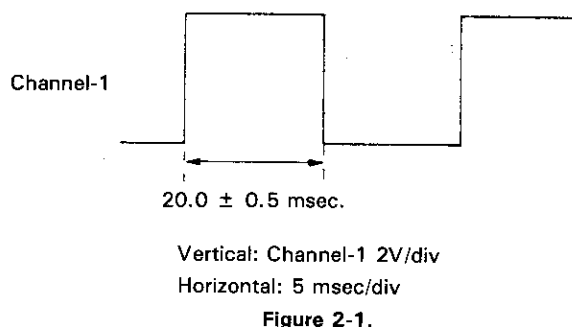
• ADJUSTMENT OF SERVO CIRCUIT

Tracking preset adjustment: R707

Oscilloscope	CH-1: TP701	Shown in Figure 2-1
--------------	-------------	---------------------

(Internal Trigger: CH-1(+) Side)

1. Insert the alignment tape (VROCPSV) into the unit.
2. Playback the tape and set the playback tracking control at the "center click" position.
3. Adjust R707 (preset control) to provide the waveform.



Adjustment of the playback switching point: R720

Oscilloscope	CH-1: TP703 CH-2: video output terminal	Shown in Figure 2-2
--------------	--	---------------------

1. Insert the alignment tape (VROCPSV) into the unit.
2. Using the puls (-) trigger slope of the oscilloscope, adjust R720 (SW POINT) to provide a waveform of 6.5 ± 0.5 H as shown in Fig. 2-2.
3. Disconnect the oscilloscope.
4. Remove the alignment tape.

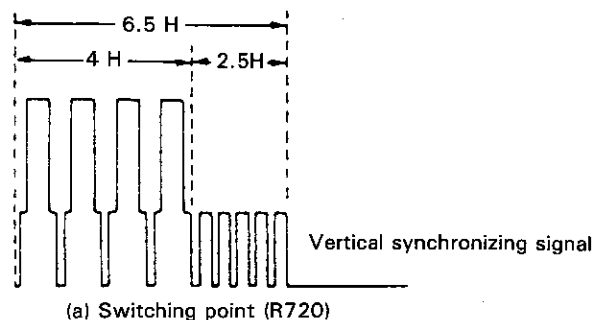


Figure 2-2.

• ADJUSTMENT OF Y/C CIRCUIT

Adjustment of EE level: R253

Note:

Connect a 75 ohm resistor between the video output and ground.

Oscilloscope	Video Output Terminal	Shown in Figure 2-3
--------------	-----------------------	---------------------

(External Trigger: TP2201 on Main PWB.)

1. Put the unit in the record mode.
2. Apply a colour bar signal to the unit.
3. Adjust R253 (EE level control) so that the waveform.
4. Remove the 75 ohm resistor.

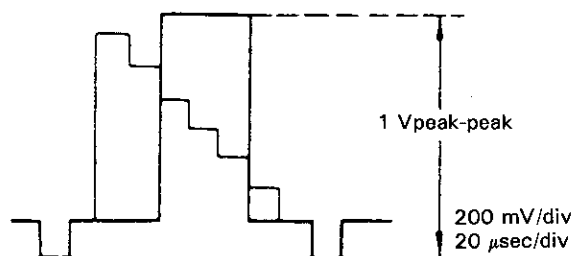


Figure 2-3.

Adjustment of playback video signal level: R209

Note:

Connect a 75 ohm resistor between the video output and ground.

Oscilloscope	Video Output Terminal	Shown in Figure 2-4
--------------	-----------------------	---------------------

(External Trigger: TP2201)

REPLACEMENT OF D.D. (DIRECT DRIVE) MOTOR

● Removal (Fig. 1-31)

1. Remove the two screw ① (SW3P + 5S) which hold the D.D. rotor assembly in place, using a phillips screwdriver.
2. Remove the D.D. rotor assembly by pulling it straight out.
3. Remove the three brass screws ② (2.6P + 14S) which hold the D.D. stator assembly in place, using a phillips screwdriver.
4. Remove the D.D. stator assembly by pulling it straight out.

● Assembly

1. Place the D.D. stator assembly on top of the lower drum.
2. Secure the D.D. stator with the three brass screws ② (2.6P + 14S) using a phillips screwdriver.

Note:

Be careful not to scratch the core, windings, or hall device.

3. Insert the D.D. rotor assembly into the drum shaft.

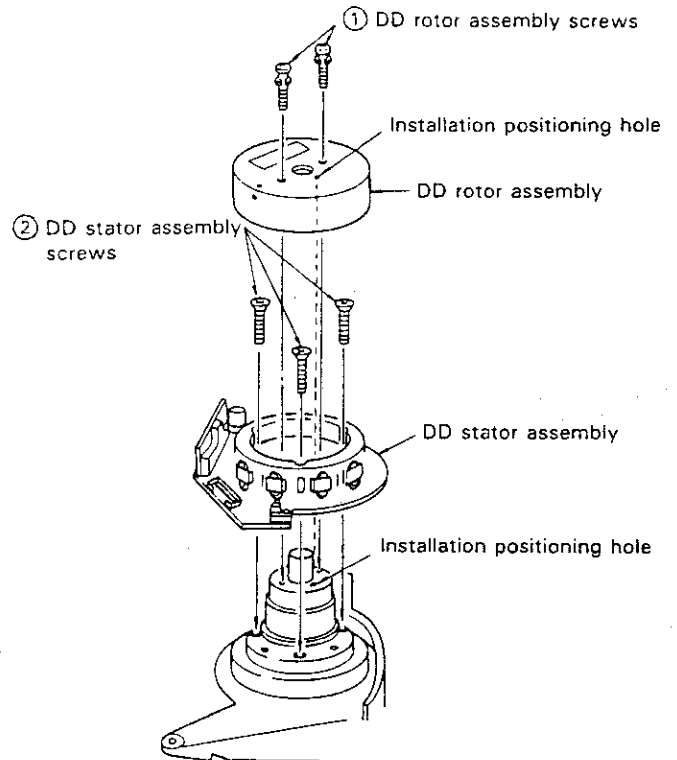
Note:

Insert directly into the direction of the shaft. (Refer to Fig. 1-31 for the installation direction.)

4. Secure the D.D. rotor assembly by the screws ①.
5. Secure the D.D. rotor assembly so that the installation positioning holes in the D.D. rotor assembly and lower drum match.
6. After replacement of the D.D. motor as shown above, proceed with the adjustment of the playback switching point.

Notes:

1. Be sure not to damage the upper drum or the video head.
2. Be sure that the hall device is not damaged by the D.D. rotor assembly or other parts.



Note 1: Secure the DD rotor assembly so that the installation positioning holes in the DD rotor assembly and lower drum match.

Figure 1-31.

1. Put the unit in the playback mode, an alignment tape (VROCPSV) with a colour bar waveform.
2. Adjust R209 (playback level control) so that the waveform.
3. Remove the 75 ohm resistor.

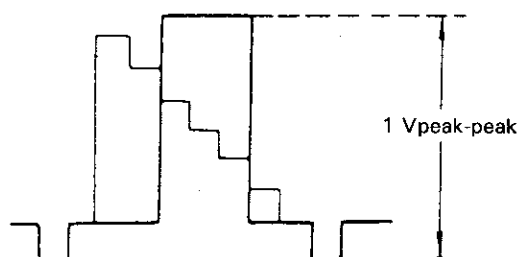


Figure 2-4.

Adjustment of FM 3.8 MHz and 4.8 MHz: R216, R222

1. Turn R229 (white clip control) counter clockwise as far as it will go and release the white clip.
2. Confirm that EE level and PB level are within the specified values.
3. Put the unit in the record mode.
4. Connect a frequency counter to ⑤ Pin of IC201 and adjust R216 (FM carrier) so that the reading becomes 3.8 MHz.
5. Apply a colour bar signal to that unit.
6. Connect the oscilloscope (external trigger: TP2201) to video output (75 Ω terminal).
When the auto record and playback level is less than 1.0Vp-p, turn R222 (deviation) counterclockwise; when it is more than 1.0 Vp-p, turn R222 clockwise. Repeat this until the reading becomes 1.00 ± 0.05 Vp-p. (Refer to Fig. 2-3)
7. Unplug the standard colour bar and input a pin plug and short circuit the input. Connect a frequency counter to ⑤ Pin of IC201 and confirm that the reading is 3.8 MHz.
8. White clip controls are released at step 1, so re-adjustment must be performed.

Adjustment of white clip: R229

Oscilloscope	TP201	Shown in Figure 2-5
--------------	-------	---------------------

1. Put the unit in the record mode.
2. Apply a colour bar signal (stair-case waveform) to the unit.
3. Adjust R229 (white clip control) so that the resultant waveform.

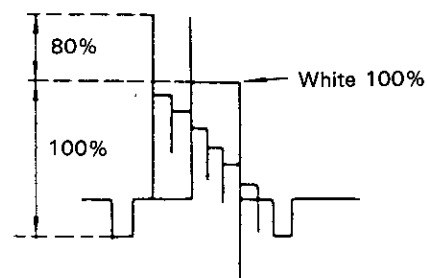


Figure 2-5.

Adjust of FM record circuit: R263, R515

Dual-trace Oscilloscope	GND: TP-32 CH-1 SIG: TP-31 (On the Head Amp PWB)	25 mVp-p (Figure 2-6) 140 mVp-p (Figure 2-7)
-------------------------	--	---

(External Trigger: TP2201/The GND of the external trigger should not be connected to ground.)

1. Put the unit in the record mode.
2. Apply a colour bar signal to the unit.
3. Connect the GND of the dual-trace oscilloscope to TP-32, CH-1 SIG to TP-31.
4. Set R515 (Record FM level control) to "minimum" position.
5. Adjust R515 (record chroma level control) so that the red signal output is 25 mVp-p. (Fig. 2-6).
6. Adjust R263 (record FM) so that the sync tip is 140 mVp-p. (Fig. 2-7)

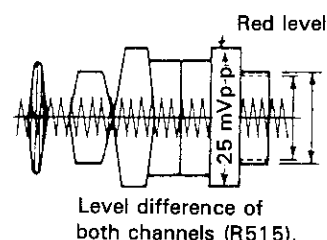


Figure 2-6.

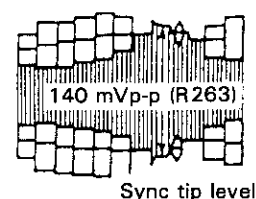


Figure 2-7.

APC Adjustment: R507

Frequency Counter	Y/C PWB Connector 12 pin	4.433619 MHz ± 10 Hz
-------------------	--------------------------	-----------------------------

1. Insert the alignment tape (VROCPSV) into the unit.
2. Adjust R507 so that the frequency 4.433619 MHz ± 10 Hz.

• ADJUSTMENT OF AUDIO CIRCUIT**Adjustment of the playback output level: R609 (on Audio PWB)**

VTVM	Audio Output Terminal	- 8 dBm ± 0.5 dBm
------	-----------------------	--------------------------

1. Playback an alignment tape (VROCPSV) with 1 kHz signal, for level calibration.
2. Adjust R609 (playback level control) to attain an output level.

Erase Voltage/oscillator frequency checking

Oscilloscope Frequency Counter	Both Terminals of Full Erase Head	40 Vp-p 70 kHz ± 7 kHz (Figure 2-8)
--------------------------------	-----------------------------------	---

1. Put the unit in the record mode.
2. Make sure the erase voltage is more than 40 Vp-p.
3. Make sure the oscilloscope frequency is 70 kHz ± 7 kHz.

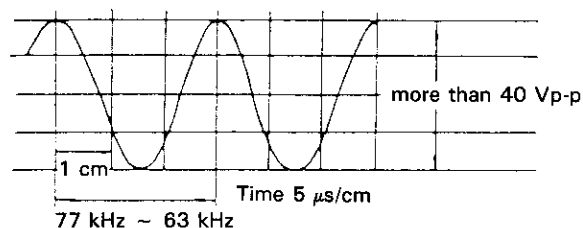


Figure 2-8.

Adjustment of the bias current: R622

VTVM	GND: TP602 SIG: TP601	2.2 mV ± 0.1 mV (220 ± 10 μ A)
------	--------------------------	---

1. Put the unit the record mode.
2. Adjust R622 (bias current control) so that the bias current.

Record level checking

VTVM	Audio Output Terminal	- 3.8 dBm (500 m) ± 3 dBm
------	-----------------------	----------------------------------

1. Apply a 1 kHz, - 3.8 dBm (0.50 Vrms) to the audio input terminal, record it and then play it back.
2. When playing back, see that the audio output.
3. If not - 3.8 dBm (± 3 dBm), repeat the above adjustments.

• ADJUSTMENT OF ON-SCREEN DISPLAY (O.S.D.) CIRCUIT

The ON-SCREEN DISPLAY system is designed to display at a time and confirm program NO., channel, week/day, starting time and length on the TV monitor screen, though they were displayed and confirmed on the fluorescent tube of timer.

Adjustment of colour burst signal

1. Set to OSD mode.
2. Connect the frequency counter to TP2701 (signal) and TP2702 (GND) on the Digital (B) PWB, and adjust the trimmer C5911 (on the main PWB) to obtain 44.3362 MHz ± 20 Hz.

Position (lateral) of program characters

After setting to OSD mode, display the content of the program on the monitor screen, and adjust the trimmer C5904 (on the main PWB) so that the program characters (program No., channel, week/day, starting time and length) are arranged properly on the screen.

Adjustment: Digital (A) K2648HE

1. Either receive an RF broadcast or perform input of Video signals.
2. Press the STROBO key of R/C to set the EE STROBO mode.
3. Connect the oscilloscope to TP2801, then adjust C2804 (Write Clock ADJ) so that the waveform duty becomes 50% (see Fig. 2-9).

Oscilloscope: IV/DEV, 0.5 μ sec/DIV
INT, NORMAL, DC, Slope (-)

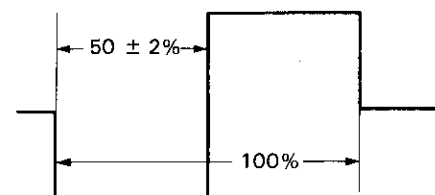


Figure 2-9.

4. Connect the oscilloscope to TP2802, then adjust C2810 (Read Clock ADJ) so that the waveform duty becomes 50% (see Fig. 2-9).

Adjustment: Digital (B)

1. Set CHANNEL to AV (AUX) mode so that nothing is input to the VIDEO IN terminal.
2. Set the COLOR MODE switch to OFF (Blue Mute OFF).
3. Disconnect the "SH" connector.
4. Connect the frequency counter to Pin 4 (4.43 MHz) of connector "SH," then adjust C2609 (OSC ADJ 2) so that the counter value becomes $4433.62 \pm .02$ kHz. Counter GND level is Pin 3 of connector "SH."
5. Connect the frequency counter to TP2701 (4.43MHz) (GND is TP2702), then adjust C2727 (OSC ADJ 2) so that the counter value becomes $4433.62 \pm .02$ kHz.
6. Input PAL colour bar signals into the VIDEO IN terminal.
7. Press the STROBO key of R/C to set the EE STROBO mode.
8. Connect the oscilloscope to Pin 1 (B-Y) of connector "SH" (GND is Pin 3 of "SH").
 - (8-1) Adjust R2631 (Burst Cleaning) until section A shown in Fig. 2-10 is minimized.
 - (8-2) Adjust R2619 (1H GAIN) until the cracking in section B (the dotted line) shown in Fig. 2-10 is minimized.
 - (8-3) Adjust L2601 (1H PHASE) until the cracking in section C shown in Fig. 2-10 is minimized.
 - (8-4) Alternately perform the adjustments in Steps (8-1) to (8-3) two or three times until the waveform indicated by the solid line in Fig. 2-10 is shaped.

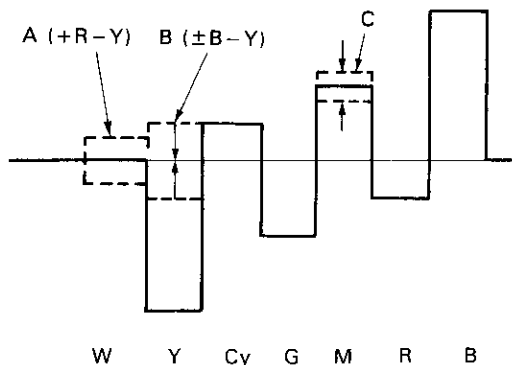


Figure 2-10. B-Y Waveform

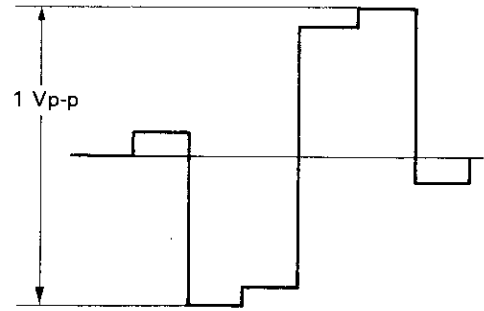


Figure 2-11. R-Y Waveform

9. Connect the oscilloscope to Pin 2 (R-Y) of connector "SH," then adjust R2601 (Colour Level) so that the waveform amplitude becomes 1 Vp-p.
10. Plug in connector "SH."
11. Connect the oscilloscope to video output, then alternately adjust R2709 (R-Y Carry Balance) and R2710 (B-Y Carry Balance) two or three times until the white noise shown in Fig. 2-12 is minimized.

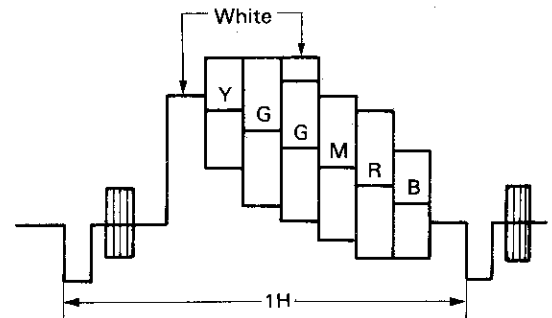


Figure 2-12. Video Output Waveform

• H-S Detection Circuit

PLL frequency adjustment: R1464

1. Connect the frequency counter to the fosc pin of TP1451 after passing through the buffer shown in the figure on the left.
2. As shown in the figure, connect 1μ (50V) between Pin 5 of IC1452 of TP1451 and the GND pin of TP1451. (Remove the connection after completing adjustment.)
3. Adjust R1464 so that the value of the counter display becomes 15.625 kHz.

Within ± 50 Hz

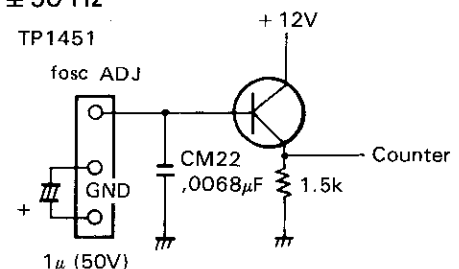


Figure 2-13.

Test Point Layout

MAIN F2647GE

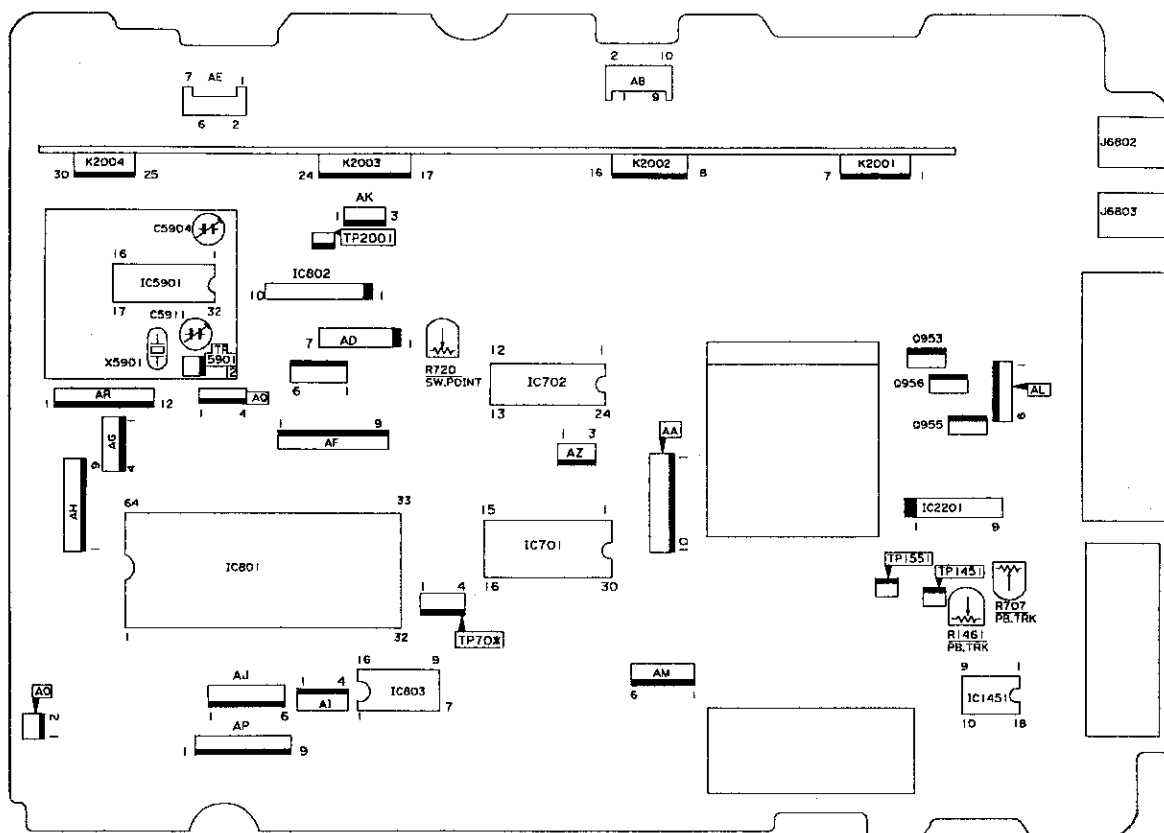


Figure 2-14. Main Circuit

Y/C F2664GE

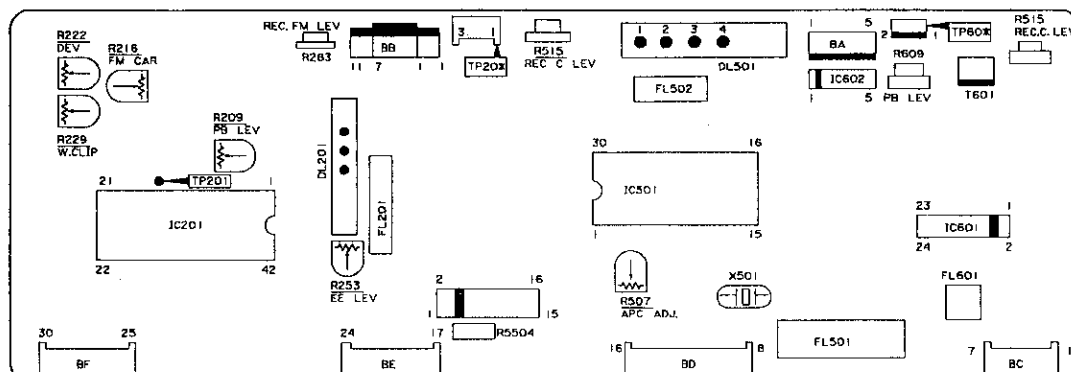
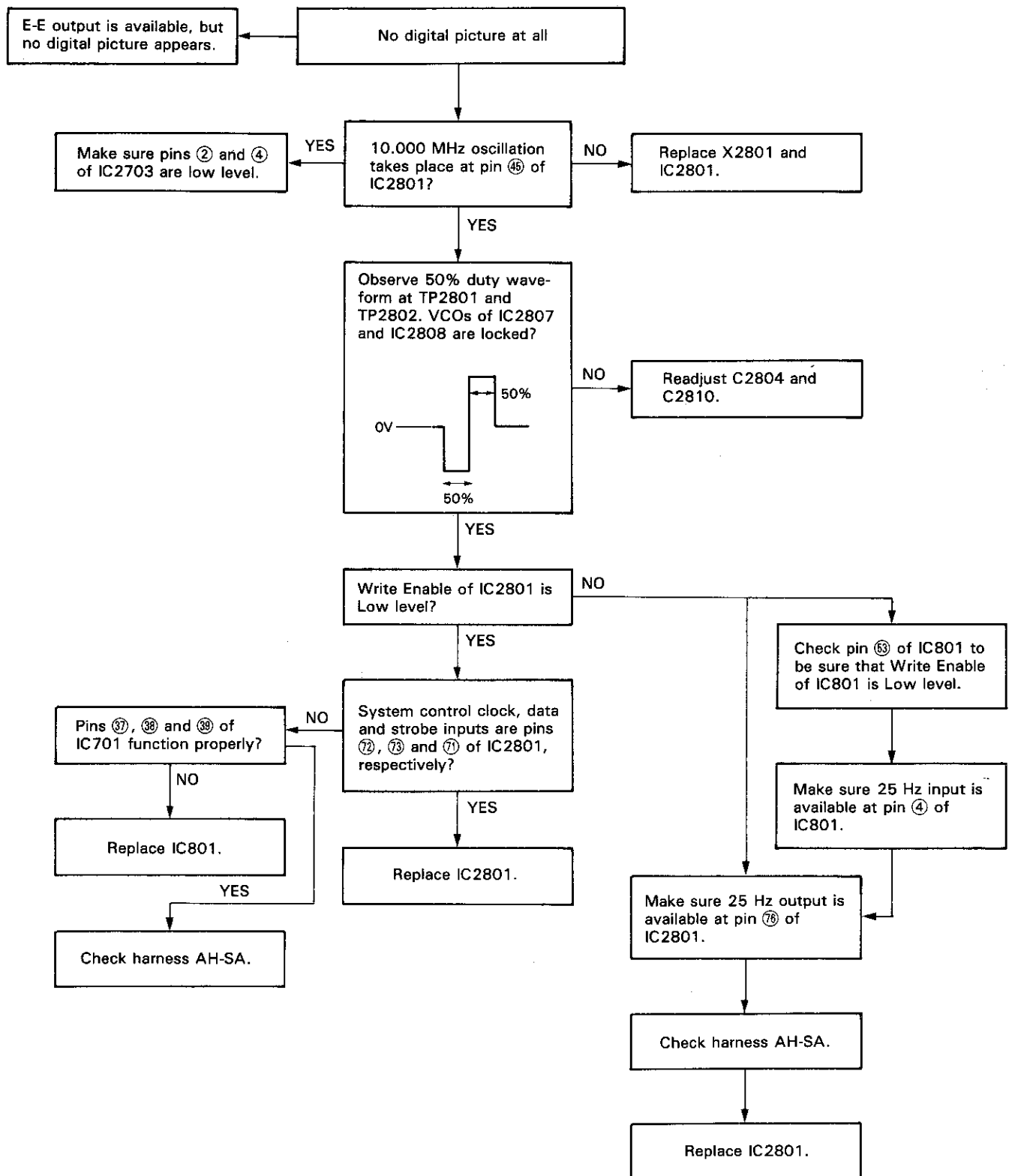


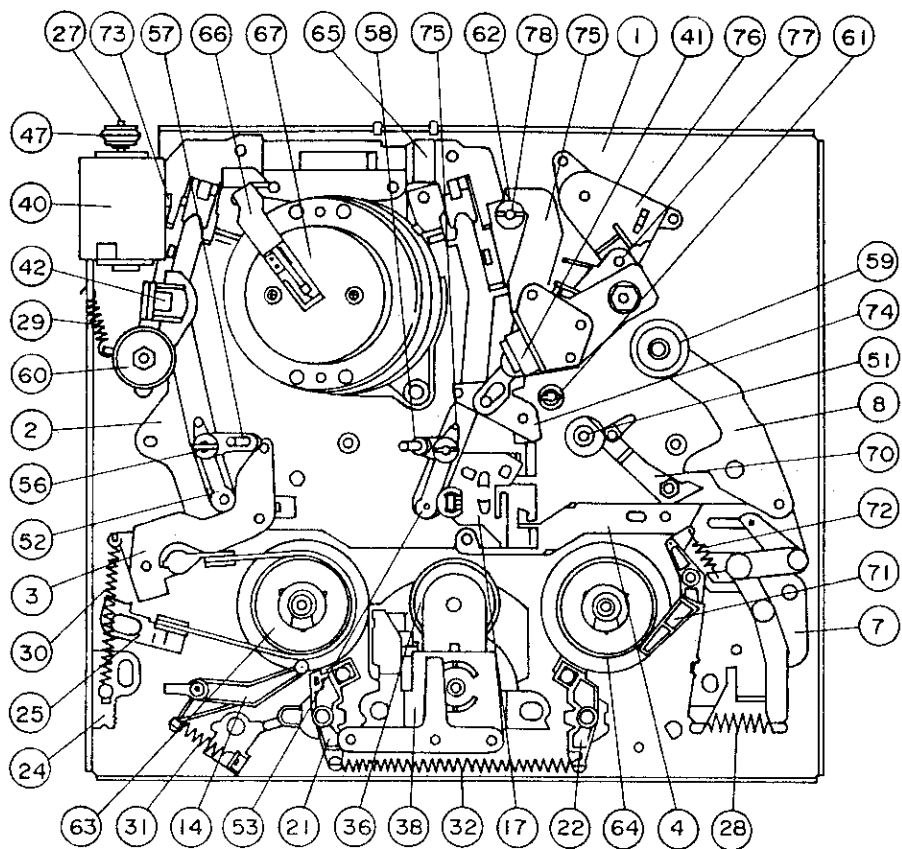
Figure 2-15. Audio, Y/C Circuit

DIGITAL MEMORY (1) TROUBLESHOOTING

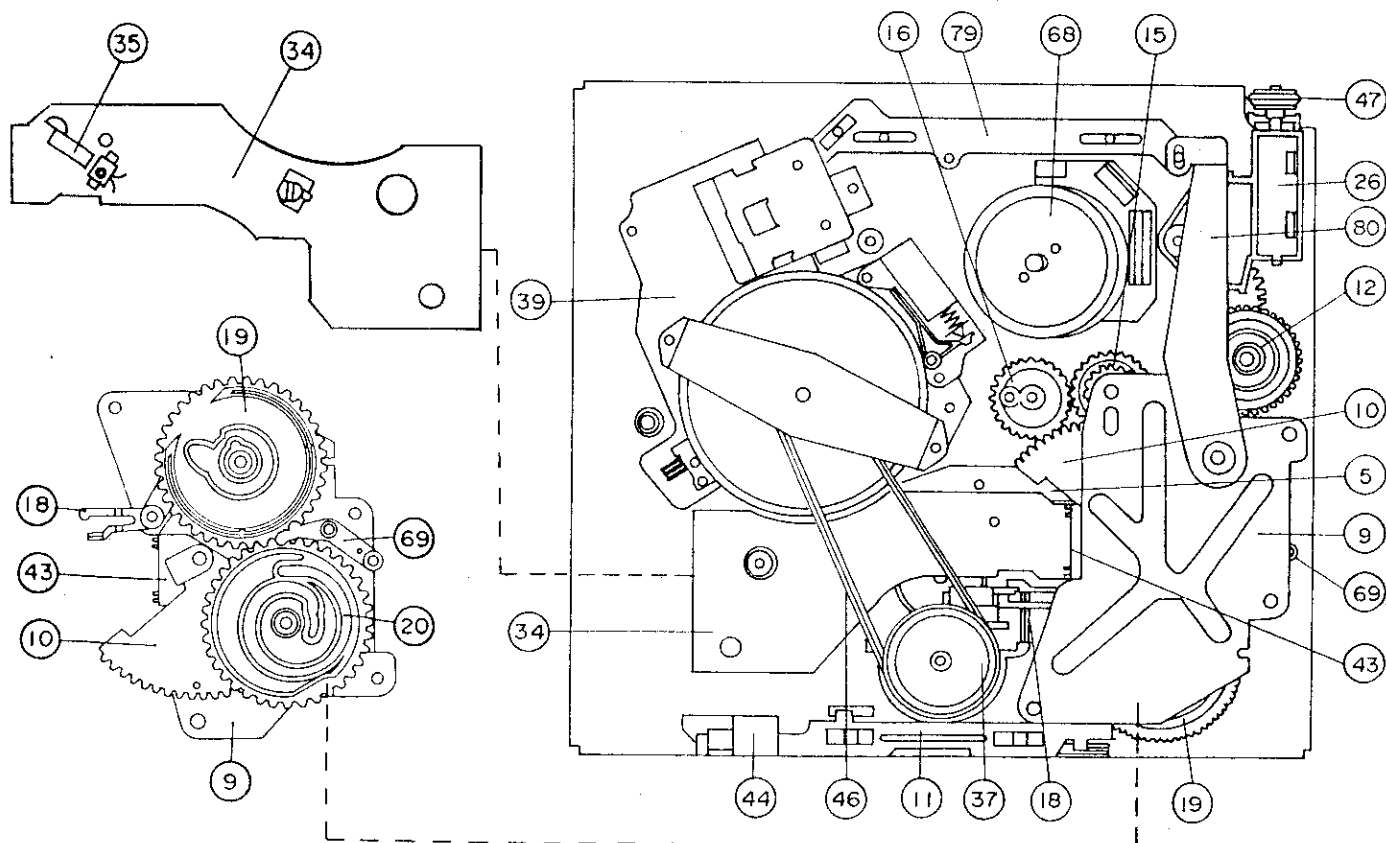


LOCATION OF MECHANICAL PARTS

• TOP VIEW



• BOTTOM VIEW



LOCATION LIST OF MECHANICAL PARTS

No.	Part Name	No.	Part Name
1	Main chassis ass'y	40	Loading motor
2	Guide plate ass'y	41	Audio/Control head
3	Tension arm ass'y	42	Full-erase head
4	Shifter (B) ass'y	43	Cam switch
5	Shifter (A) ass'y	44	Brake solenoid
7	Pinch roller link plate ass'y	46	Reel belt
8	Pinch roller lever	47	Loading belt
9	Mechanism control bracket	51	Capstan shaft
10	Segment gear ass'y	52	Pole base (A) (supply side)
11	Brake drive lever	53	Pole base (B) (take-up side)
12	Relay gear (B)	56	Guide roller (supply side/take-up side)
14	Auxiliary brake lever	57	Supply slant pole
15	Loading gear (A)	58	Take-up slant pole
16	Loading gear (B)	59	Pinch roller
17	LED holder	60	Supply impedance roller
18	Torque change lever	61	Retaining guide
19	Brake cam	62	X-position adjusting nut
20	Master cam	63	Supply reel disk
21	Supply brake lever	64	Take-up reel disk
22	Take-up brake lever	65	V base
24	Tension adjusting plate	66	Earth brush
25	Tension band ass'y	67	Drum
26	Loading block	68	Drum DD motor
27	Loading motor pulley	69	Tension release lever
28	Pinch pressure spring	70	Reverse guide ass'y
29	Full-erase head arm spring	71	Universal brake
30	Tension arm spring	72	Universal brake spring
31	Auxiliary brake spring	73	Dew sensor
32	Main brake spring	74	Half Load lever
34	Reel sensor PWB	75	Relay gear lever A
35	Shifter switch	76	Relay gear lever B
36	Reel idler	77	Connection lever
37	Reel pulley	78	Audio/Control arm
38	Reel drive unit bracket	79	Half Load Shifter
39	Capstan DD motor	80	Cam lever ass'y

ADJUSTMENT, REPLACEMENT, ASSEMBLING AND TOOLS NECESSARY FOR MECHANICAL ADJUSTMENT



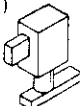




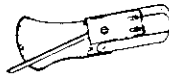


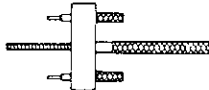
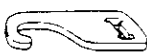


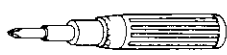
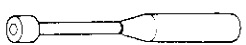
● Outline

Periodical maintenance is necessary for efficient operation. In some instance field service may be achieved with common tools. More extensive

service will require special tools and test equipment. Appropriate tools should be used at all times.

TOOLS NECESSARY FOR ADJUSTING THE MECHANICAL UNITS

The following tools are recommended for proper service and satisfactory repair.

No.	Jig Item	Part No.	Code	Configuration	Remarks
1	Reel Disk Height Adjusting Jig	JIGRH0002	BR		These Jigs are used for checking and adjusting the Reel Disk Height.
2	Master Plane Jig	JIGMP0001	BY		
3	A/C Head Tilt Adjusting Jig	JIGACH51B	BU	(A)  (B) 	This Jig is used for height adjustment of the running tape to the Video Head. This is used for take-up retaining guide height adjusting.
	Fixed guide height adjusting jig	JIGGH51B	BM		
4	Torque Gauge 90 g	JIGTG0090	CM		These Jigs are used for checking and adjusting the torque of Take-up and Supply Reel disks.
	Torque Gauge 1.2 kg	JIGTG1200	CN		
5	Gauge Head	JIGTH0006	AW		
6	Cassette Torque Gauge	JIGVHT-063	CZ		This cassette torque gauge is used for checking and adjusting torque of take-up and supply reel and for measuring tape back tension.
7	Tension Gauge (300g)	JIGSG0300	BF		There are several Gauges used for the tension measurements, 300 g and 2.0 kg.
	Tension Gauge (2.0 kg)	JIGSG2000	BS		
8	Hex Wrench (0.9 mm)	JIGHW0009	AE		These Jigs are used for loosening or tightening special Hexagon type screws.
	Hex Wrench (1.2 mm)	JIGHW0012	AE		
	Hex Wrench (1.5 mm)	JIGHW0015	AE		
9	Alignment Tape (PAL)	VROCPSV	CK		This tape is especially used for electrical fine adjustment.
10	Drum Replacing Jig	JIGDT-0001 or JIGDT-0001CD	BG AZ		This is used for the replacement of the VCR's upper drum.
11	Tension Gauge Adaptor	JIGADP003	BK		This Jig is used for the tension gauge. Rotary Transformer Clearance Adjusting Jig.
12	Special Bladed Screwdriver	JIGDRIVERH-4	AP		This Screwdriver is used for adjusting the guide roller height.
13	Tension Band and Plate Adjusting Jig	JIGDRIVER-6	BM		This Jig is used for adjusting tension band and tension plate adjust.
14	Torque Driver	JIGTD1200	CB		This Jig is used for fixing measurement, 12 kg.
15	AC Head Height Adjusting Box Driver	JIGDRIVER110-7	AS		This Jig is used for height adjustment of the A/C head.

NOTE:

Current JiGMA0001 contains master plane (JiGMP0001) and Disk Height Adjusting Jig (JiGRH0001). Even though new Disk Height Adjusting Jig (JiGRH0002) covers wider height, this new Jig (JiGRH0002) can be used for current JiGRH0001, however current Jig (JiGRH0001) cannot be used as JiGRH0002. Master plane (JiGMP0001) can be used with JiGRH0001, and also JiGRH0002.

* * * * *

MECHANICAL PARTS REQUIRING PERIODICAL INSPECTION

Use the following table as a guide to maintain the mechanical parts in good operating condition.

Parts \ Maintained every	500 hrs.	1000 hrs.	1500 hrs.	2000 hrs.	3000 hrs.	Remarks
Guide roller ass'y	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Abnormal rotation or significant vibration requires replacement.
Supply impedance roller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Supply impedance roller (inner)		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	Clean with pure high quality isopropyl alcohol.
Supply impedance roller flange B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Clean tape contact area with the specified cleaning liquid.
Retaining guide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Guide flange B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Slant pole	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Video head	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Clean tape contact area with the specified cleaning liquid.
Full-erase head	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
A/C head	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Capstan belt		<input type="checkbox"/>		<input type="checkbox"/>		Clean rubber and rubber contact area with the specified cleaning liquid.
Pinch roller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Reel belt		<input type="checkbox"/>		<input type="checkbox"/>		
Loading belt		<input type="checkbox"/>		<input type="checkbox"/>		
Capstan motor					<input type="checkbox"/>	
Loading motor					<input type="checkbox"/>	
Supply/take-up reel disk		<input type="checkbox"/> <input type="triangle"/>		<input type="checkbox"/> <input type="triangle"/>		Clean with pure high quality isopropyl alcohol.
Tension band ass'y					<input type="checkbox"/>	
Reel drive unit					<input type="checkbox"/>	
Reel idler	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Reel pulley	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Supply/take-up brake lever				<input type="checkbox"/>		

NOTE: ☐: Part replacement.
☐: Cleaning (For cleaning, use a lint-free cloth dampened with pure isopropyl alcohol).
: Oil refilling (The indicated point should be lubricated with high quality spindle oil every 1000 hrs).

This model has no adjusting volumes for torques, tension, etc. If the reading is outside the specified range, clean or replace the part.

REMOVAL ADJUSTMENT AND REPLACEMENT OF CASSETTE HOUSING CONTROL ASSEMBLY

Notes:

1. During removal and installation be careful not to strike the nearby guide pin, drum, etc.
2. Before removal or installation, be sure to unplug the recorder from the AC outlet.

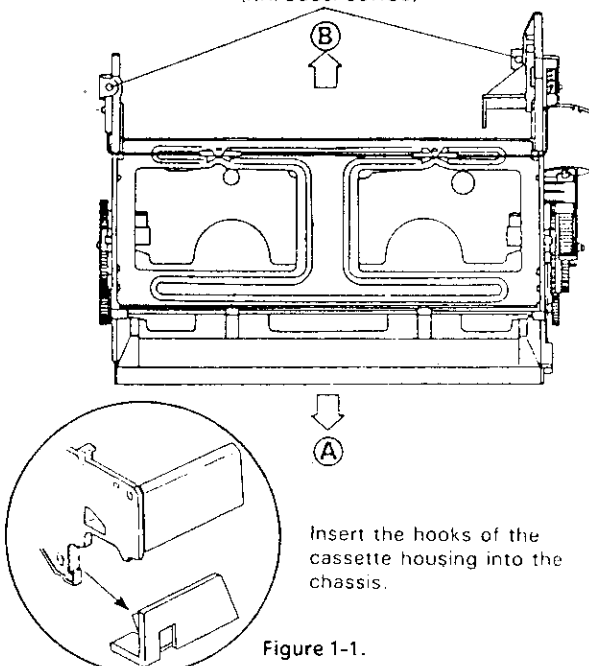
• Removal

1. Put the unit in the cassette ejected position.
2. Disconnect the connector at the right side of the cassette housing control assembly (Be careful not to break the leads.)
3. Remove the two cassette housing installation screws.
4. Move the cassette housing control assembly (Fig. 1-1) in the direction of arrow ⇒ ⑥, and pull it out straight upward.

• Assembly

1. Connect the connector at the right side of the cassette housing control assembly.
2. Insert the tabs of the cassette housing control assembly into mechanism chassis, move it in the direction of arrow ⇒ ④, and secure temporarily. Check to be sure that the cassette housing control assembly is in the correct position, and then tighten the two screws (XHPS330P06WS0).
3. Correctly place the lead wiring of the connector at the right side of the cassette housing control assembly.

(XHPS330P06WS0)



DISASSEMBLY AND REASSEMBLY OF WORM WHEEL ASSEMBLY

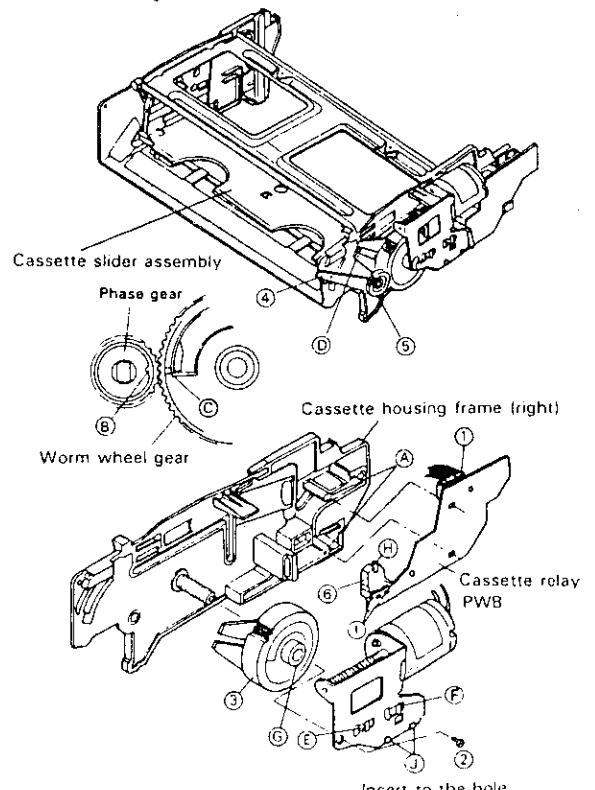
• Disassembly (Fig. 1-2)

1. Remove the lead connector ① from the cassette relay PWB.

2. Loosen the two tabs ③ at the cassette relay PWB and remove the cassette relay PWB from the frame.
3. Remove the screw ② from the cassette motor bracket and detach the cassette motor assembly together with the cassette relay PWB from the cassette housing frame.
4. Withdraw the worm wheel assembly ④.

• Reassembly (Fig. 1-2)

1. Move the cassette slider assembly towards the cassette lid.
2. Turn the phase gear ⑤ clockwise until it stops.
3. After setting up the worm wheel assembly, fit the alignment mark ③ of the worm wheel assembly to the alignment mark ⑥ of the phase gear. Then insert them into the frame shaft: this time, check that the tab ① of the cassette slider assembly is engaged with the drive arm groove.
- The worm wheel is likely to fall off the frame shaft in this step: be sure to hold the worm wheel by hand.
4. Align the tab ⑤ of the timing lever with the worm wheel groove ③ and secure the worm wheel assembly with the screw ②.
5. Align the tab ⑥ of the timing lever with the groove ④ of the cassette mode switch ⑥, and secure the cassette relay PWB with the frame's tab ③: this time, check that the two tabs ① of the cassette mode switch are surely engaged with the cassette motor bracket groove ①.
6. Insert the lead connector into the socket of the cassette relay PWB.



• Set up of worm wheel assembly (Fig. 1-3)

1. Put the tab **A** of the drive arm **1** into the hole **B** of the drive gear **2**.
2. Hook both ends of the drive spring **3** onto the tab **A** of the drive arm and tab **C** of the drive gear respectively.
3. Hook one end **E** of the drive reciprocating spring **4** onto the tab **D** of the drive gear assembly and mount another end **F** of the drive reciprocating spring onto the tab **G** of the drive gear: this time, hold the end **F** of the drive reciprocating spring by hand.
4. Fit the tab of the worm wheel gear **5** onto the tab **C** of the drive gear.
5. Using a tapered screwdriver, hook the end **F** of the drive reciprocating spring onto the tab **J** of the worm wheel gear: check that both ends of the drive reciprocating spring have been engaged with the respective tabs of the drive gear assembly.
6. Holding the drive gear by hand, turn the worm wheel gear by the other hand counterclockwise. Then the tab **C** of the drive gear will be engaged with the hole **I** of the worm wheel gear **5**.
(The worm wheel gear doesn't tend to rotate reversely but it is likely to slip out of the shaft **H** of the drive gear. To avoid this, hold both the drive gear and worm wheel gear by hand.)

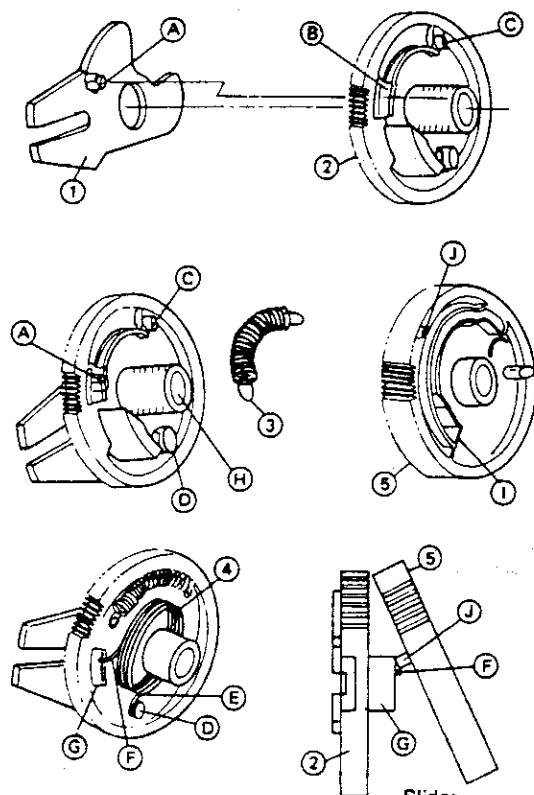
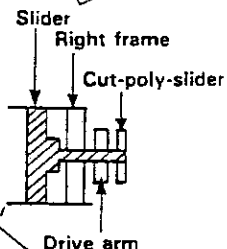


Figure 1-3.



REPLACEMENT OF CASSETTE LEVER ASSEMBLY

• Disassembly (Fig. 1-4)

1. Remove the slit poly-slider washers from the right and left shafts.
2. Turn the worm gear **1** by hand counterclockwise until the cassette slider assembly **2** reaches the bottom position.
3. Slightly extend the right and left frames **3** to allow the tabs **A** of the cassette slider assembly **2** to go out of the holes of the right and left frames.
4. Remove the lever spring **7** off the slider **2** and the cassette lever **5**. Be careful not to deform its hooks.
5. Remove the slit poly-slider washer **4** (1.4W6-0.5) from the slider shaft.
6. Unsnap the cassette tip **6** from the cassette lever **5** by pressing the lever's center. Be careful not to deform the cassette lever **5**.

• Reassembly

Take the reverse order of the above steps 1 thru 6.

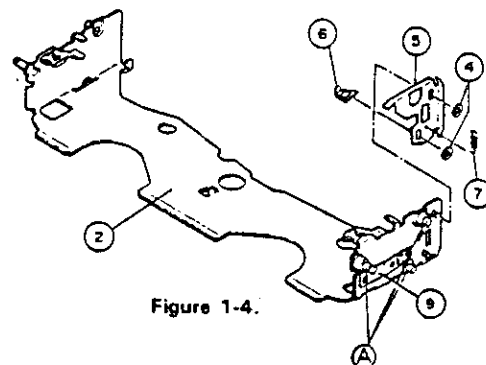
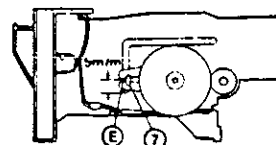
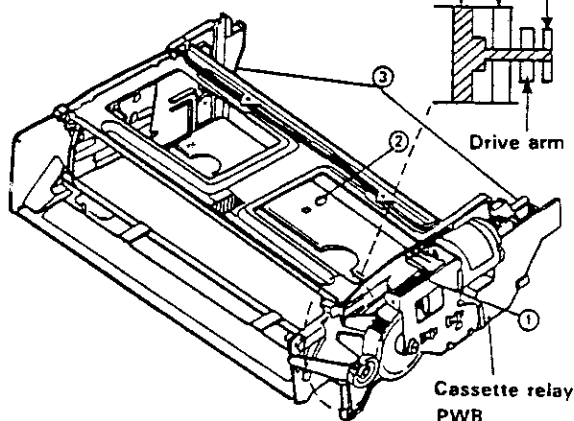


Figure 1-4.

TO RUN A TAPE WITHOUT THE CASSETTE HOUSING CONTROL ASSEMBLY

1. Open the lid of a cassette tape by hand and hold it with a piece of vinyl tape.
2. Set the cassette tape in the tape mechanism. Then, stabilize the cassette tape with a weight (500 g or less).

Note: The weight should not be more than 500 g.

REMOVAL AND HEIGHT ADJUSTMENT OF REEL DISKS

• Removal of supply reel disk:

1. Remove the tension band ⑥ and tension arm ②.
 2. Remove the split washer ①.
 3. Pull the supply reel disk ③ upwards, and replace.
- * At this time, remove the height adjusting washer ⑤ and clean it.

• Removal of take-up reel disk:

1. Remove the split washer ①.
 2. Pull the take-up reel disk ④ upwards, and replace.
- * At this time, remove the height adjusting washer ⑤ and clean it.

Notes:

1. After replacing either of the reel disks, be sure to perform the height adjustment procedure.
2. Take care not to damage the tension band.
3. Be careful not to deform the auxiliary brake lever, supply brake lever, take-up brake lever and universal brake lever. (See page 3; item 14, 21, 22 and 71.)
4. Check the tension pole position. (See pages 11 and 12.)

• Replacement of supply reel disk:

1. Clean the reel disk shaft, and set the height adjusting washer ⑤.
2. Place the new supply reel disk onto the shaft.
3. Adjust the reel disk height by using the master plane and reel disk height adjusting jig.
4. Take the new supply reel disk off, apply oil (high quality spindle oil) to the reel disk shaft and again place the disk onto the shaft.
5. Replace the split washer ①.
6. Replace the tension arm ② and tension band ⑥.

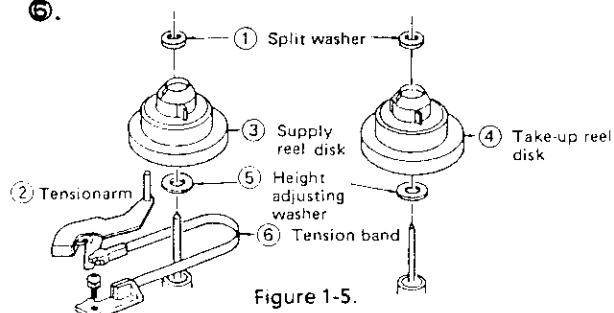


Figure 1-5.

• Replacement take-up reel disk:

1. Clean the disk shaft, and set the height adjusting washer ⑤.
2. Place the new take-up reel disk onto the shaft.
3. Adjust the reel disk height by using the master plane and reel disk height adjusting jig.
4. Take the new reel disk off, apply oil (high quality spindle oil) to the reel disk shaft and again place the disk onto the shaft.
5. Replace the split washer ①.

Notes:

1. Take care not to damage the reel disk shaft's surface with the tools.
2. After replacement, check back the tension in video search (VS) mode (see page 11) and checking of brake torque. (See page 13.)

HEIGHT ADJUSTMENT

1. Remove the cassette housing, and place the master plane onto the mechanism unit as shown in Fig. 1-6(a), taking care not to hit the drum.
2. Insure that the reel disk is lower than the part ④ but higher than the part ③ of Fig. 1-6(b), by using the reel disk height adjusting jig. If the height is not correct use the height adjusting washers. Backlash on the shaft should be 0.1 to 0.8 mm.

Note: Whenever replacing the reel disk, perform the height adjustment.

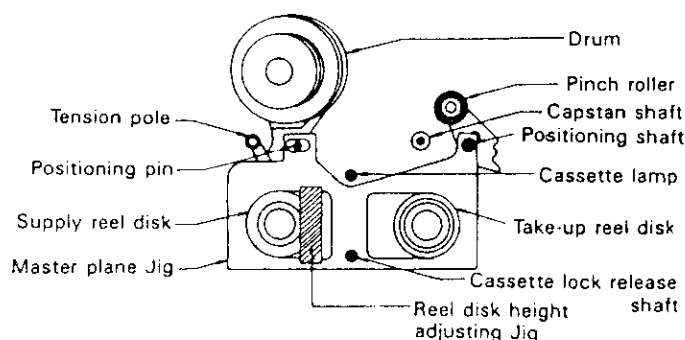


Figure 1-6.(a) top view

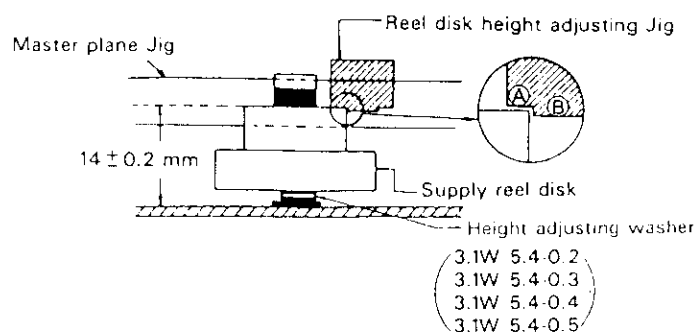


Figure 1-6.(b) side view

ADJUSTMENT OF FAST FORWARD TORQUE

Notes:

1. The torque gauge is liable to slip off the reel disk when rotation starts.
2. Perform this check without the use of a cassette tape.

• Checking (See Fig. 1-7)

1. Remove the cassette housing.
2. Set the torque gauge on the take-up reel disk and push the fast forward button.
3. Turn the torque gauge very slowly by hand (one rotation every 2 to 3 seconds) and check that it indicates a little more than 600 g.cm. Check that there is no slippage between the reel idler and relay idler or take-up reel disk.

• Adjustment

If the fast forward torque is less than 600 g.cm, use isopropyl alcohol to clean the relay idler, reel idler and take-up reel disk, then recheck the torque. If fast forward torque is still less than 600 g.cm, replace the reel belt.

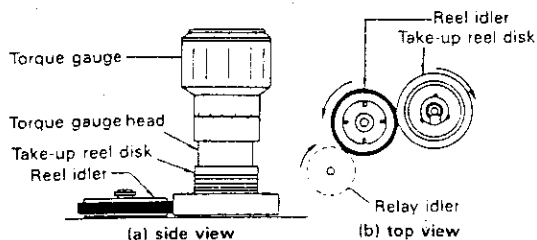


Figure 1-7.

ADJUSTMENT OF REWIND TORQUE

Notes:

1. The torque gauge is liable to slip off the reel disk when rotation starts.
2. Do not lock the reel disk, and avoid making this measurement for an extended period.

• Checking (See Fig. 1-8)

1. Remove the cassette housing.
2. Set the torque gauge on the supply reel disk and push the rewind button.
3. Turn the torque gauge very slowly by hand (one rotation every 2 to 3 seconds) until it indicates a little more than 600 g.cm. Check that there is no slippage between the reel idler and relay idler or supply reel disk.

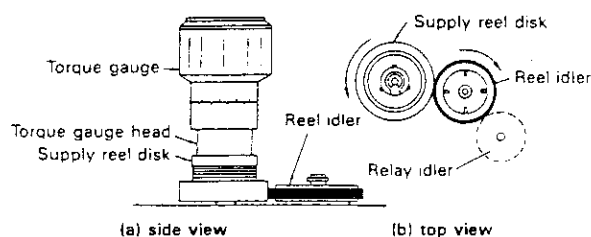


Figure 1-8.

• Adjustment

If the rewind torque is less than 600 g.cm, use isopropyl alcohol to clean the relay idler, reel idler and supply reel disk, then recheck the torque. If rewind torque is still less than 600 g.cm, replace the reel belt.

ADJUSTMENT OF PLAYBACK TORQUE

• Checking

1. Remove the cassette housing.
2. Place a torque meter cassette in the mechanism and set the mechanism to the record mode. Check that the torque is within the specified range.

Torque in mode: 110 ± 40 g.cm

Note:

The measured torque fluctuates due to the rotational deviation of the reel drive unit. Use the center of the fluctuating range as the measured value.

3. If the torque is outside the specified range, clean the reel idler, take-up reel disk, and relay idler with isopropyl alcohol. Then recheck the torque.
4. Check that the torque in the record mode is within the specified ranges.
5. If the playback torque is still outside the specified range, replace the reel drive unit.

CHECKING THE FAST FORWARD BACK TENSION

Note:

Set the torque gauge securely on the supply reel disk; if the torque gauge is loose above the reel disk an inaccurate measurement will result.

• Checking

1. Remove the cassette housing.
2. Push the fast forward button to place the unit in the fast forward mode.
3. Place the torque gauge on the supply reel disk, turn it clockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within 37 ± 5 g.cm.

CHECKING THE REWIND BACK TENSION

Note:

Set the torque gauge securely on the reel disk; if the torque gauge is loose above the reel disk an inaccurate measurement will result.

• Checking

1. Remove the cassette housing.
2. Push the rewind button to place the unit in the rewind mode.
3. Place the torque gauge on the take-up reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within 20 ± 5 g.cm.

CHECKING THE VIDEO SEARCH BACK TENSION

Note:

Set the torque gauge securely on the take-up reel disk; if the torque gauge is loose above the reel disk an inaccurate measurement will result.

• Checking

1. Remove the cassette housing.
2. Push the play button to place the unit in the playback mode.
3. Push the video search forward button to place the unit in the video search rewind mode.
4. Place the torque gauge on the take-up reel disk, turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is between 30 ± 8 g.cm.

CHECKING THE PINCH ROLLER PRESSURE

1. Remove the cassette housing.
2. Push the play button to place the unit in the playback mode.
3. Hook the tension gauge adapter around the pinch roller shaft.
4. Using a tension gauge, pull the pinch roller in the direction of arrow → ① so that the pinch roller moves away from the capstan shaft.
5. Gradually release the pressure in the direction of arrow → ② to allow the pinch roller to touch the capstan shaft. When the pinch roller just touches the capstan shaft, read the indication on the gauge.
6. Check that the reading of the tension gauge is in the range of 1000 to 1200 gr.

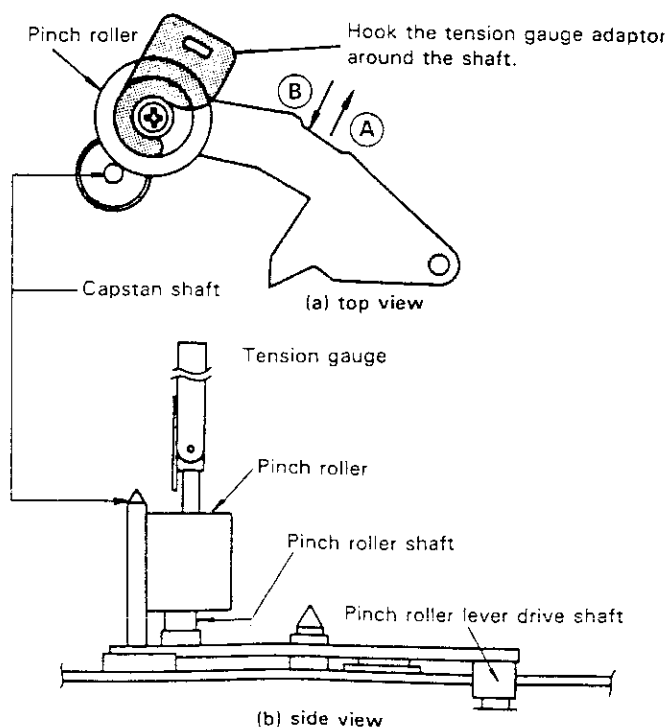
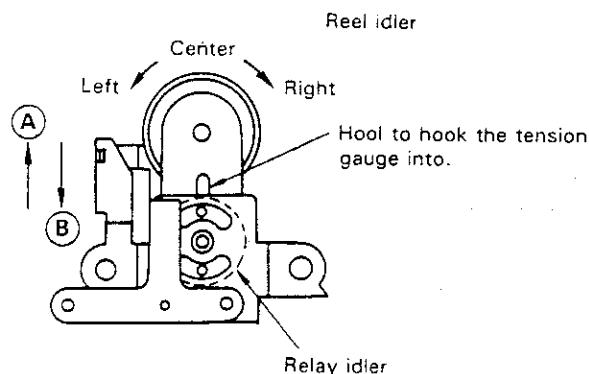


Figure 1-9.

CHECKING THE REEL IDLER PRESSURE

1. Remove the cassette housing.
2. Place the reel idler in its center position as shown in Fig. 1-10.
3. Using a tension gauge, push the reel idler in the direction of arrow → ① so that the reel idler moves away from the relay idler.
4. Release the pressure gradually in the direction of arrow → ②, so that the reel idler touches the relay idler again. Check that the reading of the tension gauge is within 105 to 145 g.cm.



How to use tension gauge

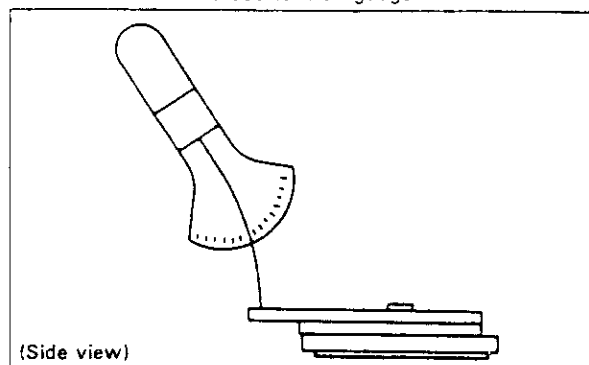


Figure 1-10.

ADJUSTMENT OF TENSION POLE

• Position checking (Fig. 1-11)

1. Remove the cassette housing.
2. Load a video cassette tape and push the record button to place the unit in the recording mode.
3. The pole bases A and B (see page 3; item 52 and 53.) operate to bring the tape outside the cassette housing and simultaneously the tension pole moves to the left, loading the tape. At that time (loading mode), check the position of the tension pole.
4. At the end of the tape (E-180), check that the tension pole's center is 0.6 to 1.0 mm to the right of the supply impedance roller's center.
5. Check that the tape is neither curled against the flange of the supply impedance roller nor mounted over it.
6. During the video search REW mode, check that the supply reel disk is free of the tension band.

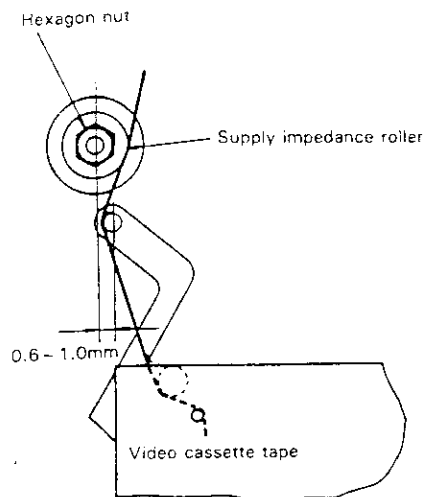


Figure 1-11.

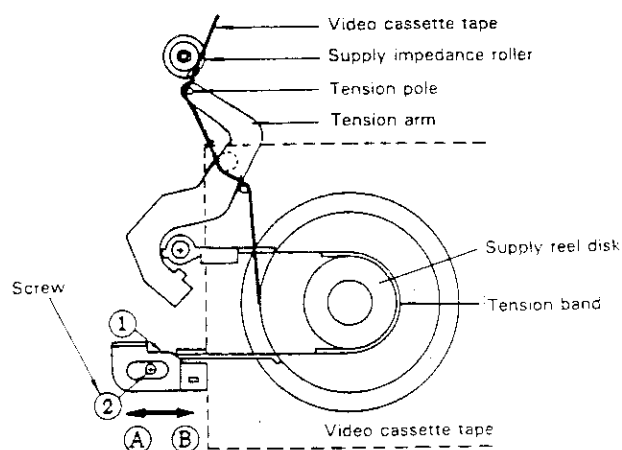


Figure 1-12.

• Position adjustment (Fig. 1-12)

1. If the tension pole is more than 1.0 mm to the right of the supply impedance roller's center, shift the tension band control bracket ① in the direction of arrow → ②, and tighten the screw ③.
2. If the tension pole is less than 0.6 mm to the right of the supply impedance roller's center, shift the tension band control bracket ① in the direction of arrow → ④, and tighten the screw ③.

Notes:

1. After the adjustment, apply glyptal on the screw.
2. If the screw is tightened beyond its limit (5kg. cm), its effect becomes nil (be careful not to over tighten). Use the specified torque drive (JIGTD1200).

ADJUSTMENT OF RECORD/PLAYBACK BACK TENSION

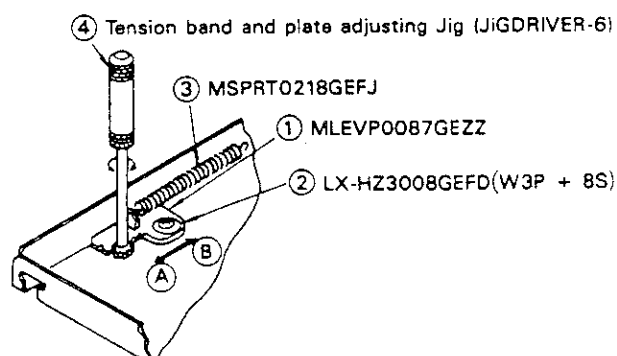
(1) When using a torque meter cassette.

• Checking

1. Remove the cassette housing.
2. Put a back tension torque meter cassette tape into the unit.
3. Push the record button to place the unit in the record mode. Check that the reading of the cassette tape's pointer is 50 to 58 g.cm.
4. Make sure the video cassette tape is wound over the retaining guide.
5. Make sure that the tape is not slack nor damaged at either end.

• Adjustment

1. If the tape tension is less than the specified value move the tension adjust plate by tension band and plate adjusting jig ④ in the direction of arrow → ⑤ in Fig. 1-13, and tighten the screw ②.
2. If the tape tension exceeds the specified value move the tension adjust plate by tension band and plate adjusting jig ④ in the direction of arrow → ⑥ in Fig. 1-13, and tighten the screw ②.



{ Toward ⑤ if lower than specified value
Toward ⑥ if higher than specified value

Figure 1-13.

Note:

Be careful not to tighten the screw too much, because to do so will damage the screw threads of the chassis. Be sure to use the specified jig (JiGDRIVER-6).

CHECKING THE BRAKE TORQUE

A) Checking the brake torque at the supply side.

• Checking

1. Remove the cassette housing assembly.
2. Check that the mechanism is in the stop mode.
3. Separate the reel idler from the supply reel disk and place the torque gauge on the supply reel disk.
4. Slowly rotate the torque gauge in the clockwise (CW) direction so that the reel disk and the gauge needle rotate at the same speed. Repeat for the counterclockwise (CCW) direction of the supply brake. Check that the values are within the specified ranges (CW direction = 280 to 720 g.cm, CCW direction = 110 to 230 g.cm) and that the brake torque in the CW direction is at least twice as high as the brake torque in the CCW direction at the take-up reel disk.

• Adjustment

1. If the supply brake torque is outside the specified ranges (CW direction = 280 to 720 g.cm, CCW direction = 110 to 230 g.cm), clean the supply reel disk, and then recheck.
2. If the supply brake torque is still outside the specified range, replace the main brake spring, and then recheck.

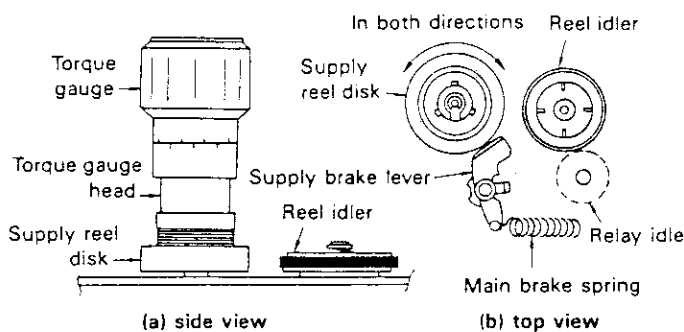


Figure 1-14.

B) Checking the brake torque at the take-up side.

• Checking

1. Remove the cassette housing assembly.
2. Check that the mechanism is in the stop mode.
3. Separate the reel idler from the take-up reel disk and place the torque gauge on the take-up reel disk.
4. Slowly rotate the torque gauge in the CW direction so that the reel disk and the gauge needle rotate at the same speed. Repeat for the CCW direction of the take-up brake. Check that the values are within the specified ranges (CW direction = 280 to 720 g.cm, CCW direction = 110 to 230 g.cm) and that the brake torque in the CW direction is at least twice as high as the brake torque in the CCW direction at the supply reel disk.

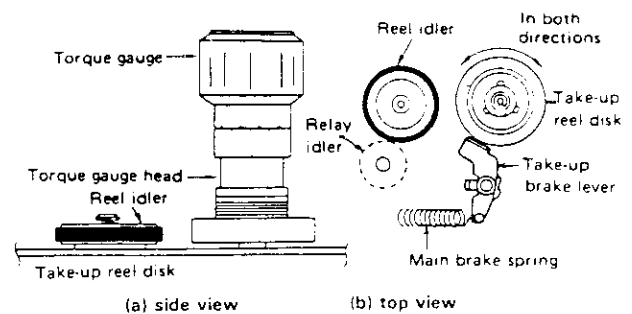


Figure 1-15.

• Adjustment

1. If the take-up brake torque is outside the specified ranges (CW direction = 280 to 720 g.cm, CCW direction = 110 to 230 g.cm), clean the take-up reel disk, and then recheck.
2. If the take-up brake torque is still outside the specified range, replace the main brake spring, and then recheck.

REPLACEMENT OF A/C (Audio Control) HEAD

Note:

After replacement, check for smooth tape movement. Under all circumstances avoid touching the head (indicated by "→" in Fig. 1-17(c)).

• Replacement (See Figs. 1-16 and 1-17)

1. Unsolder the leads attached to the A/C head PWB and remove them from the PWB.
2. Loosen the tilt adjusting screw ② by using a phillips screwdriver.
3. Remove the azimuth adjusting screw ⑤ (3P + 8S) with a phillips screwdriver.
4. Remove the A/C head screw ④ with a phillips screwdriver, paying attention to the spring ⑦ between the A/C head screw ④ and A/C head assembly ①.
5. Remove the connector soldered to the A/C head PWB, and solder the connector onto the new A/C head PWB.
6. The A/C head assembly ① is attached so that the A/C head arm and A/C head plate stand are roughly parallel to one another.
7. Set the A/C head tilt according to Fig. 1-19.
8. Play an alignment tape and roughly adjust the height of the A/C head, by eye, by turning the A/C head adjusting hexagon nut with the special nut driver until the tape comes to the position shown below. (See Fig. 1-16.)

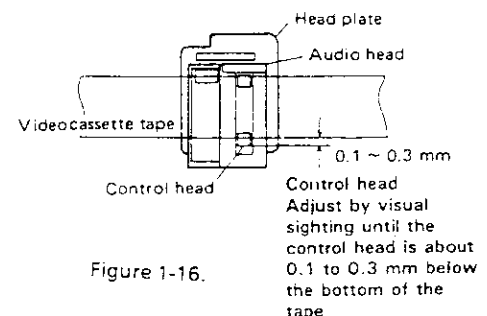
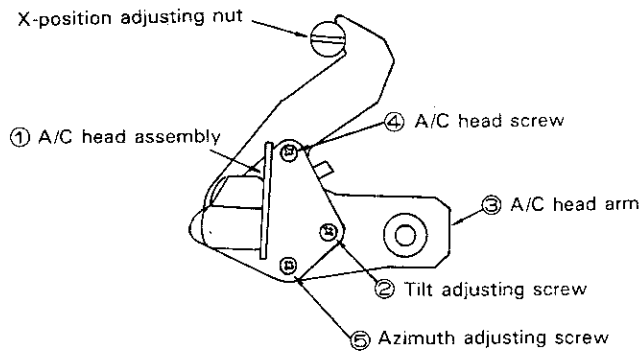
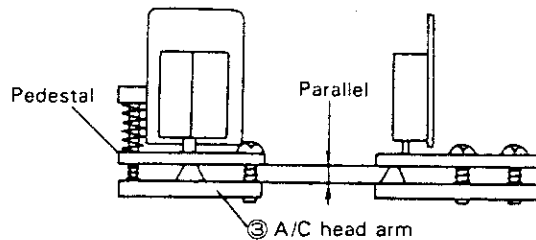


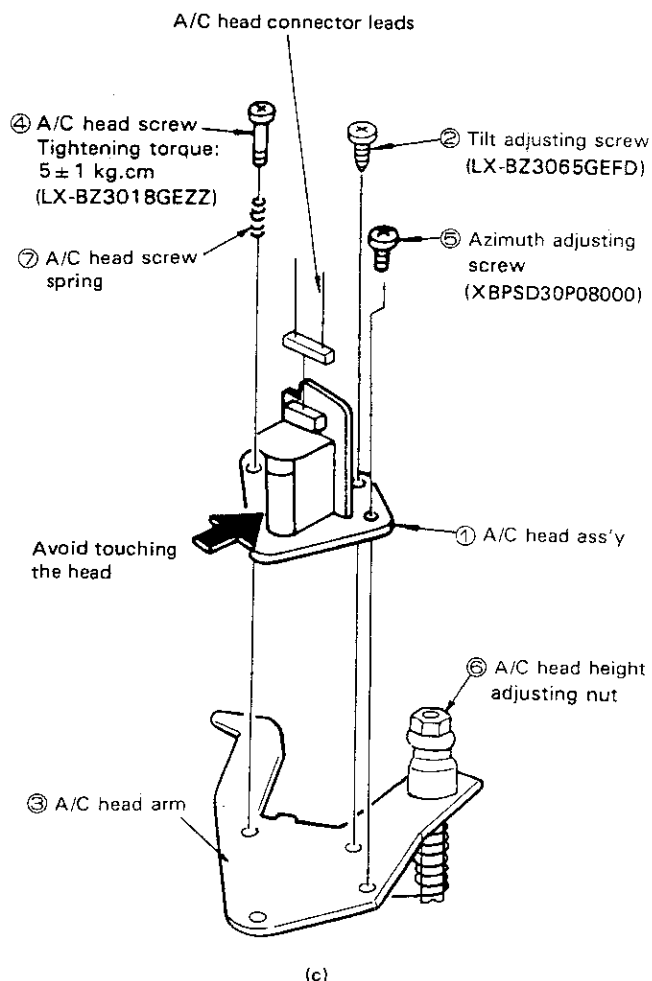
Figure 1-16.



(a)



(b)



(c)

Figure 1-17.

9. Set the mechanism to the unloading mode. Place the A/C head tilt adjusting jig on the main chassis as shown in Figs. 1-18 and 1-19. Slowly turn the set screw with a hex wrench (1.5 mm JIGHW0015) until there is no gap between the jig and the A/C head.

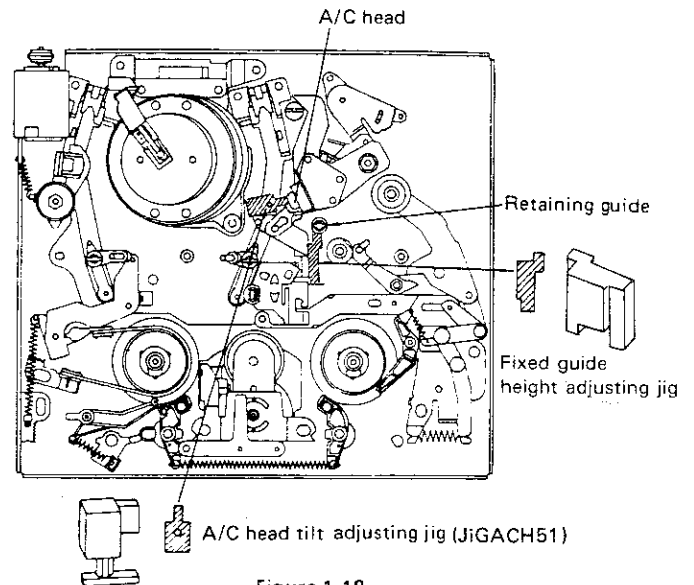


Figure 1-18.

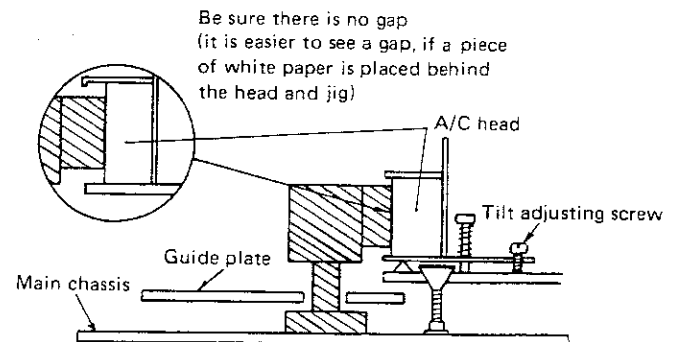


Figure 1-19.

10. When A/C head replacement has been completed, adjust the tape drive train.

ADJUSTMENT OF TAPE DRIVE TRAIN

This includes rough adjustment using an alignment tape and adjustment of retaining guide height, reverse guide height, A/C head height, azimuth, and X-position of guide roller.

- Remove the cassette housing
- 1. Check and adjust the lateral and vertical position of the tension pole and the back tension.

2. Set the angle of tilt for the A/C head as shown in Fig. 1-19.

Note:

The angle of tilt must be adjusted in the same manner as when the head was replaced, even when the A/C head is adjusted.

3. When the above adjustments have been completed, roughly adjust the tape drive train using an alignment tape.
 - a. Connect the oscilloscope to the test points for PB chroma output (TP201), head switching pulse (TP202), and GND (TP203). Allow the PB CHROMA signal to be triggered by the head switching pulse of TP202 (See Fig. 2-10).
 - b. Loosen the setscrew of the guide roller, and tighten it loosely by using a guide roller adjusting screwdriver (JiGDRiVERH-4) to such an extent so that the guide roller turns smoothly.
 - c. Set the alignment tape (VROCPSV) on the reel disk.

Note:

Attach a 400 to 650 g. weight to the cassette tape when a cassette tape is placed on the reel disk with the cassette housing removed.

- d. Set the unit to the playback mode.
- e. Observe the waveforms of the PB chroma, and adjust the tracking knob for a flat PB chroma.

This adjustment is satisfactory if a flat response is obtained on the RF output when the tracking knob is rotated. If a flat response cannot be obtained, roughly adjust the guide roller using an alignment tape until the PB chroma output is flat. Adjust the X-position adjusting nut so that the PB CHROMA envelope becomes almost maximum in the tracking center. In the case of rough adjustment, pay particular attention to the outlet side (See Fig. 1-20).

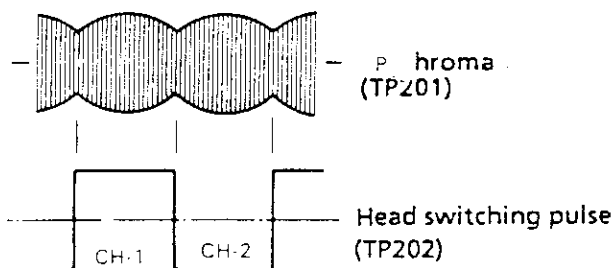


Figure 1-20.

4. The A/C head height and azimuth are adjusted after the roughly adjust the tape drive has been set.

- a. Use the alignment tape to playback its audio 7kHz signal (staircase-like waveform for video signal) and observe the audio output on an oscilloscope.
- b. Adjust the azimuth adjusting screw ⑤ (3P+8S) so as to obtain maximum audio output.
- c. Slowly rotate the A/C head height adjusting nut ③ with the special box driver so as to obtain the maximum audio output level.
- d. Adjust the azimuth adjusting screw ⑤ (3P+8S) so as to obtain maximum audio output level.

After this adjustment, apply glytal to the screws and nuts.

5. The final adjustments of tape drive train and X-position are adjusted after adjustment of the A/C head has been completed.

- a. Connect the oscilloscope to the test points for PB chroma output (TP201), head switching pulse (TP-202), and GND (TP203). Allow the PB CHROMA signal to be triggered by the head switching pulse of TP202.
- b. Play the tape drive train alignment tape (VROCPSV).

- c. Finely adjust the guide roller's height so that the envelope is as flat as possible.

Rotate the tracking knob in both directions while adjusting the guide roller, in order to obtain an envelope waveform which is as flat as possible. If the tape is above or below the helical tape position, the PB chroma waveforms will take the shape shown in Fig. 1-21.

Adjust for maximum flatness of the envelope according to the figure.

Note:

Adjustment is made for CH-1 of switching point (low level). The broken lines indicate the envelope waveform when the tape play is extreme.

After adjustment, tighten the setscrew of the guide roller firmly.

Playback tape an alignment (VROCPSV) again in the unloading mode, and make sure that there is no change in the PB chroma output.

- d. The X-Position is adjusted after tape drive train. Set the tracking knob to the "preset" position, rotate the X-position adjusting nut shown in Fig. 1-22. with the special bladed screwdriver for maximum switching pulse low side envelope, and then adjust the A/C head position. Adjust the head switching point to $6.5 \pm 0.5H$ after adjustment of the X-position.

Check the flatness of envelope and sound by self-recording.

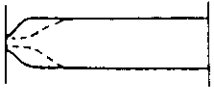
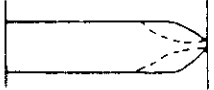


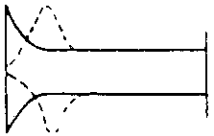
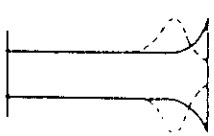
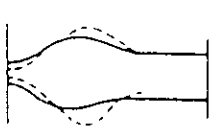

	Tape too high		Tape too low	
	Supply side	Take-up side	Supply side	Take-up side
				
				
Adjustment	Supply side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope	Take-up side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope	Supply side guide roller rotated in counterclockwise direction (raises guide roller) to give the tape some play. The supply side guide roller is then rotated in the clockwise direction to flatten the envelope	Take-up side guide roller rotated in counterclockwise direction (raises guide roller) to give the tape some play. The take-up side guide roller is then rotated in the clockwise direction to flatten the envelope

Figure 1-21.

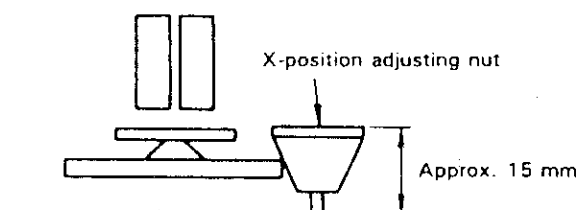


Figure 1-22.

HALF LOADING POST POSITIONING

Notes:

1. The half loading post requires repositioning in the following occasions.
 - 1) When the A/C head has been removed or replaced.
 - 2) When the A/C head height, head azimuth or X-position has been readjusted.
 - 3) When the half loading-related parts (half load cam, cam lever, half load shifter, intermediate lever, coupling plate, half load lever and half load lever spring) have been removed or replaced.
 - 4) When the mechanical control unit has been removed or replaced.
2. The half loading post should be checked and repositioned, if necessary, before bringing the machine in the playback mode, in any of the following occasions. Replacement of the A/C head (the A/C head height, head azimuth, and tilt must be finely adjusted, and the X-position adjusting nut height roughly adjusted, in this case), replacement of the half loading-related parts, and replacement of the mechanical control unit.
3. When the A/C head has been replaced, make the X-position adjustment first and then check the half loading post position. Readjust the position as required.

● Procedure:

1. Remove the cassette housing

Note: This adjustment can also be made without removing the cassette housing. But be sure to disconnect the connector off the right side of the housing.

2. Make sure the machine is in the stop mode.
3. Keep the intermediate lever screw (XBPSD26P05J50) tight with a tightening torque of about 1 kg-cm. Now turn the intermediate lever in the direction of arrow A, using the geared driver (JIGDRIVER-6).
4. Turn the intermediate lever in the direction of arrow B. Apply a torque driver to the half loading post, and tighten up the intermediate lever screw for proper half loading post positioning.

Note: Use the torque driver (JIGTD1200) for this purpose. Set the tightening torque to 5 kg-cm.

5. Set the machine in the eject mode to return the half loading post back. Next set the machine in the stop mode again (to allow the half loading post to come out) to see if the clearance between the half loading post and the A/C head is as specified (0.4-0.7 mm).
 6. Actually run the tape to make sure there is no problem with the FF, REW and PB modes.
- Note: When the A/C head has been replaced, roughly adjust the half loading post

position (the above steps 1-5). Then adjust the A/C head's X-position and finely adjust the half loading post position (the above steps 1-6).

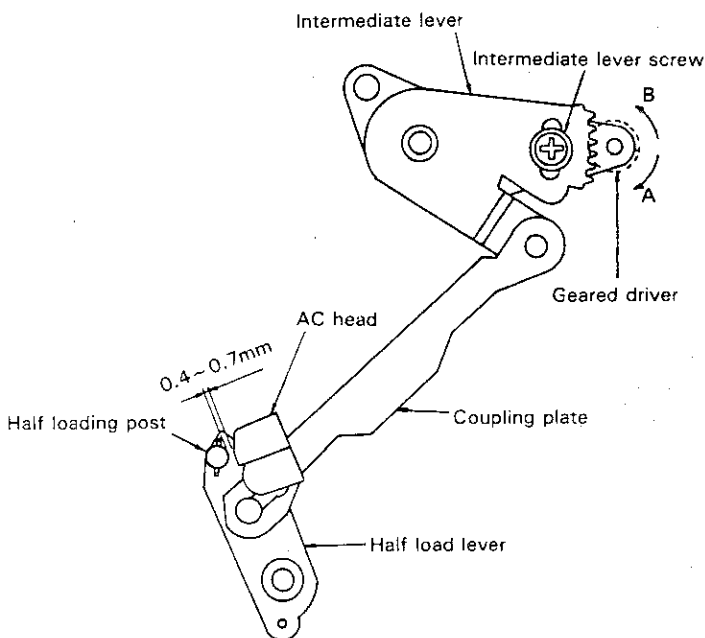


Figure. 1-23

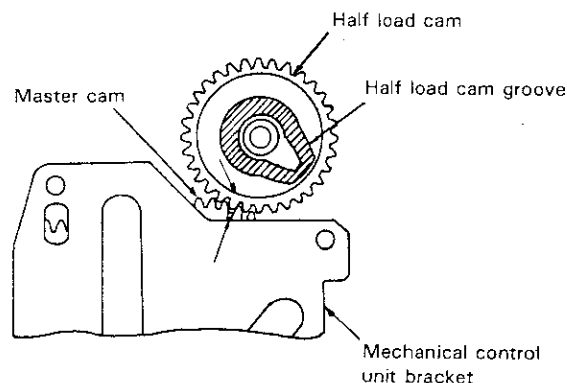


Figure. 1-24.

REPLACEMENT OF UPPER DRUM

Note:

The engagement between the lower drum (outer diameter) and the upper drum (inner diameter) is very accurate, in the order of microns, and care should be paid to their replacement. Even a slight entry of foreign material will affect the accuracy of their reassembly.

● Replacement (See Fig. 1-25)

1. Unsolder the leads ① to ④ from the video head and remove them.
2. Remove the two screws ⑤ (brass screws with washers (W3P + 9S) using a phillips screwdriver.
3. Withdraw the upper drum by pulling it up with the upper drum replacement jig. (Refer to Fig. 1-25.)

Notes:

1. Avoid touching the drum surface with bare hands.
2. Do not hit the screws when tightening them.

● Reassembly

1. Set the new drum for replacement, as shown in Fig. 1-25, and position the leads properly.

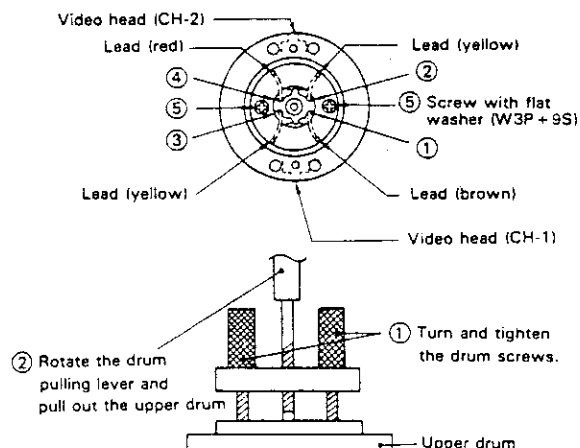


Figure 1-25.

Notes:

1. Before replacing the upper drum, check that there are no scratches or dust on the edge or the outer surface of the lower drum.
2. Before replacing the upper drum, check that there are no scratches or dust on the edge or the inner surface of the upper drum.
3. On assembling these parts, slowly insert the upper drum onto the lower drum with the upmost care, so that the upper drum is not tilted.
4. When assembling these parts, do not allow foreign material to come between them.
5. Do not use excessive force when driving in the screws.
2. Fasten the upper drum in place with the two screws ⑤.
3. Solder the leads from the video head ① to ④ to their respective pads.

Note:

Soldering should be performed quickly and carefully without touching adjacent patterns.

4. After replacement, be sure to check the tape drive train adjustment and the following.

- Adjustment of the playback switching point (See page 22)
- Checking and adjustment of the X-position (See page 15)

REPLACEMENT OF THE MECHANISM CONTROL ASSEMBLY

● Removal (Fig. 1-26)

1. Unsolder the cam switch terminal.
2. Remove the cut poly-slider washer ⑧, E-ring ⑨ and cam lever ⑩.
3. Remove the E-ring ①.
4. Remove the three screws ② (LX-HZ3027GEFD).
5. Remove the mechanism control assembly ③.

● Installation (Fig. 1-26)

1. Remove the cut poly-slider washer ④.
2. Remove the half load cam ⑤.
3. Adjust the position of the shifter assembly (A) 11 so that the alignment hole ⑧ of the chassis is aligned with the alignment holes of the shifter assembly and brake drive lever 13. (Remove the main brake spring 14 for easier positioning.)
4. Remove the tension arm spring, and fully turn loading gears (A) ⑥ and (B) 10 in the direction indicated by the arrow ⑦, to get the mechanism in the unloading mode.
5. Turn the brake cam ⑥ of the mechanism control assembly in the direction indicated by the arrow until the alignment hole ⑥ of the segment gear is at the center of the segment alignment hole for the auxiliary angle.
6. Attach the mechanism control assembly ③ to the main chassis. This can be done easily if the shifter assembly (A) 11 is moved to the left and right.
7. Secure the three screws ②.
8. Put the E-ring ① on.
9. Solder the cam switch terminal.
10. Install the half load cam ⑤ (See page 19).

Note:

When installing the half load cam, match the mark "△" (C) of the master cam with the mark "□" (D) of the half load cam.

11. Install the washer ④.
12. Install the cam lever ⑩, cut poly-slider washer ⑧ and E-ring ⑨.

Note:

When installing the cam lever, allow the cam lever pin to go into the half load cam groove.

13. Attach any removed springs such as the main brake spring 14. (See page 3)

Notes:

1. Do not exceed the specified torque when tightening the screws or the threads in the boss may become damaged.
2. After replacement, check the position of the parts, and confirm that the unit operates in all modes.

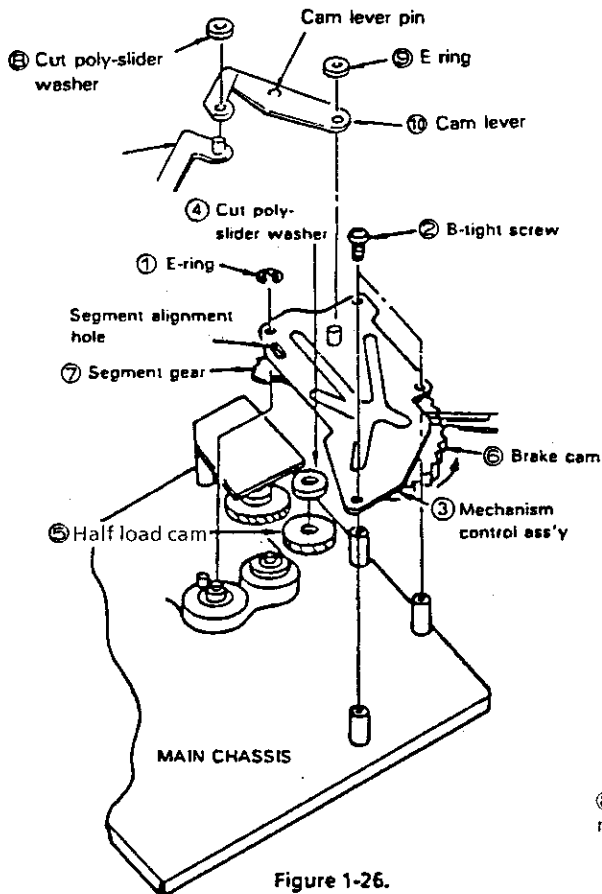


Figure 1-26.

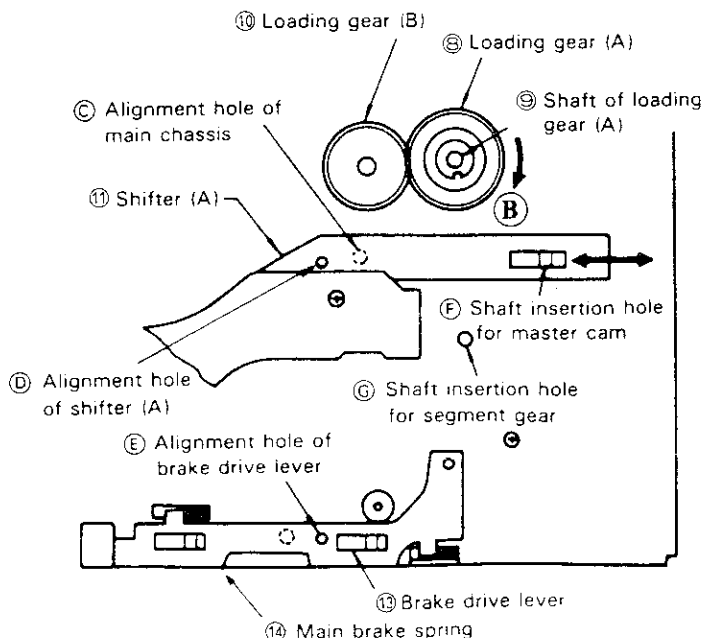


Figure 1-27.

REPLACEMENT OF THE CAM SWITCH**• Removal (Fig. 1-28)**

1. Remove the cut poly-slider washer ① and tension release lever ⑧.
2. Detach the brake cam ② from the mechanism bracket ③.
3. Remove the cam switch ④ while keeping its clips in the arrow directions. (See Fig. 1-28 (B).)

• Installation

1. Put the cam switch ④ to the brake cam ②.
2. Install the assembly of the cam switch ④, brake cam ② and tension release lever ⑧ to the mechanism control bracket ③.

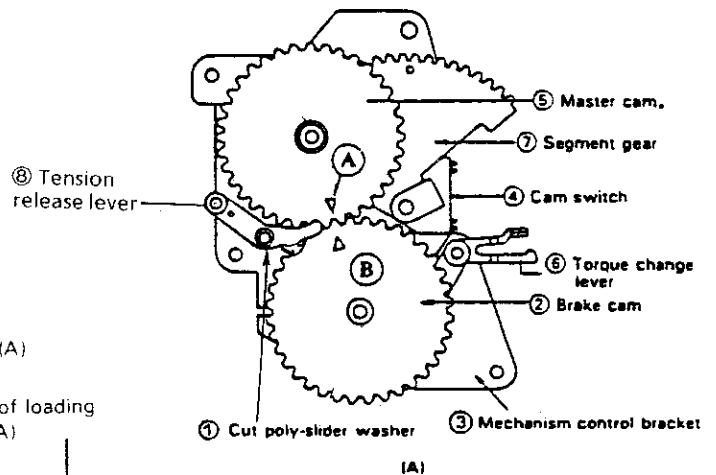
Note:

When attaching to the mechanism control unit, make sure that the alignment mark ① of the master cam is aligned with alignment mark ② of the brake cam, and line up the torque change lever with the groove on the brake cam.

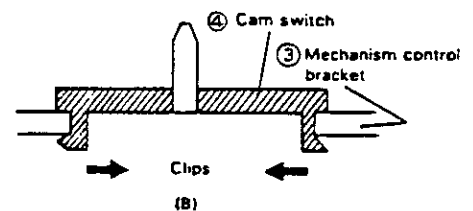
3. Put the cut poly-slider washer ① on.

Notes:

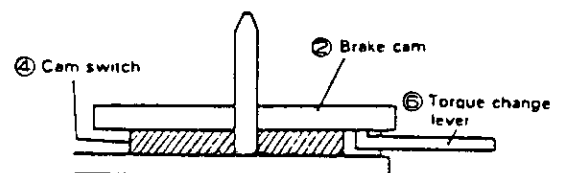
1. After assembly, rotate the brake cam and check that the torque change lever goes into the groove on the cam.
2. When replacing the master cam and brake cam, be sure to apply a light coating of grease to the cam groove.



(A)



(B)



(C)

Figure 1-28.

REPLACEMENT OF THE CAPSTAN D.D. (DIRECT DRIVE) MOTOR

• Removal

1. Remove the lead wire connector ① (flat type) from the capstan D.D. control PWB ⑥. When removing the connector, push down on the board in order to prevent the board from breaking.
2. Remove the screw ③ which holds the capstan D.D. motor control PWB ⑥ on the main chassis. Remove the screw ④ which holds the capstan D.D. motor heat sink panel onto the main chassis.
3. Remove the three screws ② 2.6P + 5.5S (S-cup) (LX-HZ3036GEFD), and remove the capstan D.D. motor 5 from the main chassis.

• Installation

1. Mount the capstan motor on the main chassis while making sure that the capstan shaft does not come into contact, and attach it with the three screws ②.
2. Attach the capstan D.D. motor control PWB ⑥ on the main chassis with the B-tight screw ③. Attach the capstan D.D. motor heat sink panel on the main chassis with the cup-tight screw ④.
3. Insert the lead wire connector ① (flat type) into the capstan D.D. motor control PWB ⑥.

Notes:

1. After installing the capstan D.D. motor, be sure to rotate the capstan motor and check the movement.
2. Check and adjust the servo circuit.
3. Do not exceed the specified torque when tightening the B-tight screws ③ or the threads in the boss may become damaged.

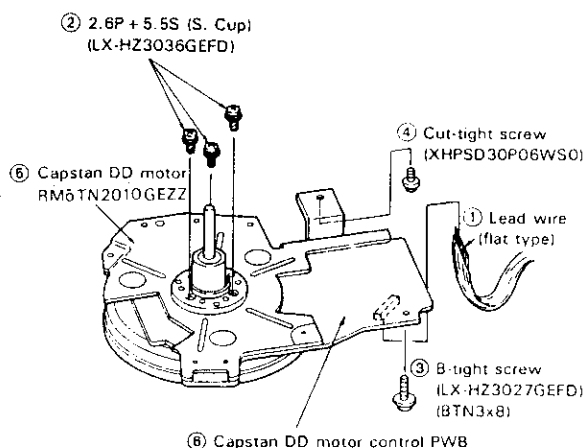


Figure 1-29.

CHECKING THE UNIVERSAL BRAKE LEVER

• Checking

1. Remove the cassette housing.
2. Push the playback button to set the unit to the playback mode.
3. Remove the reel idler from the take-up reel disk, and set the torque gauge (JIGTG0090).
4. Slowly rotate the torque gauge so that the reel disk and torque gauge pointer turn with the equal speed, and check that the set value is as specified (within 40 ± 10 g.cm).

REPLACEMENT OF THE LOADING MOTOR

• Replacement (Fig. 1-30)

1. Remove the four screws (XEBSD40P16000) securing the mechanism chassis to the plastic frame.
2. Disconnect the drum D.D. (direct drive) motor lead connector and the loading motor relay lead NF connector.
3. Remove the loading belt ①.
4. Remove the cup-tight screw ⑥ (XHPSD30P08WS0). Tilt the mechanism chassis for easy removal.
5. Remove the two screw ② (XBPSD30P05J00) and remove the loading motor ④ from the loading motor holder ③.
6. Remove the loading motor PWB ⑤.
7. Replace the loading motor along with the pulley ⑦.

Notes:

1. Check that the space between the motor and the loading motor pulley is 4.5 ± 0.1 mm.
2. After installing the loading motor, be sure to rotate the loading motor and check for smooth movement.

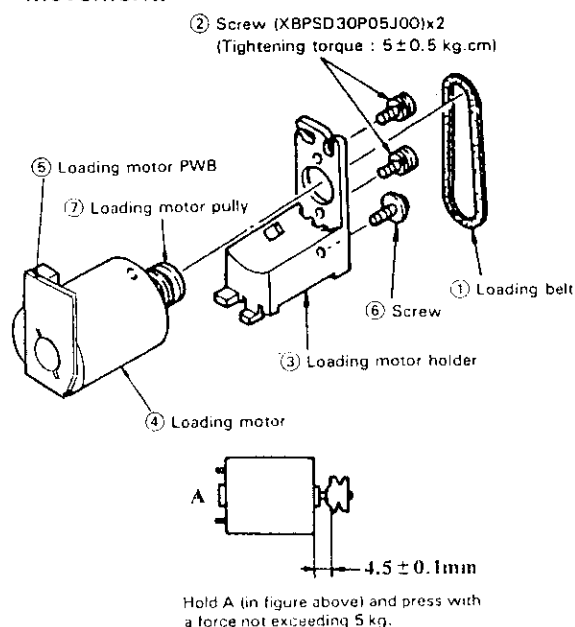


Figure 1-30.

REPLACEMENT OF D.D. (DIRECT DRIVE) MOTOR

● Removal (Fig. 1-31)

1. Remove the two screw ① (SW3P + 5S) which hold the D.D. rotor assembly in place, using a phillips screwdriver.
2. Remove the D.D. rotor assembly by pulling it straight out.
3. Remove the three brass screws ② (2.6P + 14S) which hold the D.D. stator assembly in place, using a phillips screwdriver.
4. Remove the D.D. stator assembly by pulling it straight out.

● Assembly

1. Place the D.D. stator assembly on top of the lower drum.
2. Secure the D.D. stator with the three brass screws ② (2.6P + 14S) using a phillips screwdriver.

Note:

Be careful not to scratch the core, windings, or hall device.

3. Insert the D.D. rotor assembly into the drum shaft.

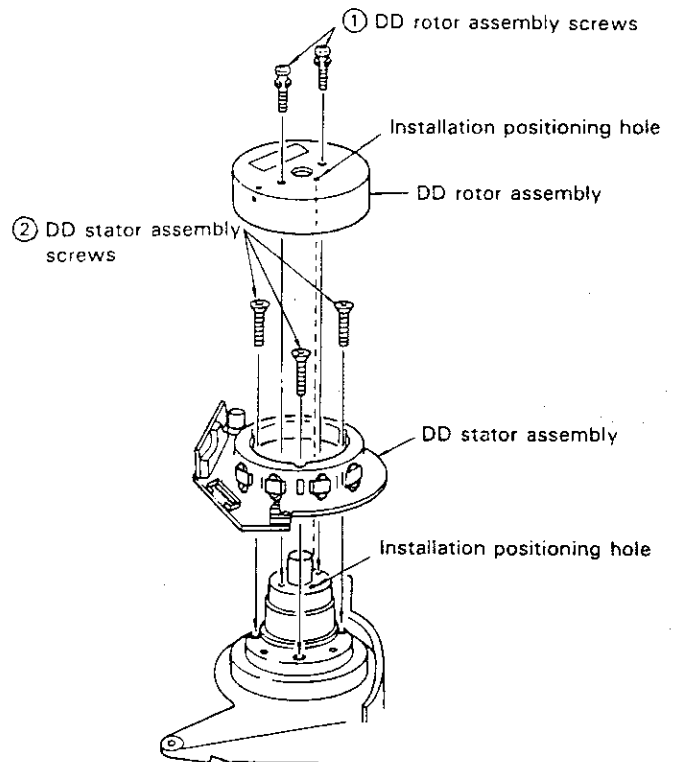
Note:

Insert directly into the direction of the shaft. (Refer to Fig. 1-31 for the installation direction.)

4. Secure the D.D. rotor assembly by the screws ①.
5. Secure the D.D. rotor assembly so that the installation positioning holes in the D.D. rotor assembly and lower drum match.
6. After replacement of the D.D. motor as shown above, proceed with the adjustment of the playback switching point.

Notes:

1. Be sure not to damage the upper drum or the video head.
2. Be sure that the hall device is not damaged by the D.D. rotor assembly or other parts.



Note 1: Secure the DD rotor assembly so that the installation positioning holes in the DD rotor assembly and lower drum match.

Figure 1-31.

ADJUSTMENT OF ELECTRICAL CIRCUITRY

Prior to the adjustment:

Most of the electrical adjustments are required after mechanical parts (video head included) have been replaced. Check that all the mechanical functions are normal before attempting adjustment of the electrical circuits.

Electrical adjustments require proper troubleshooting. After repair or parts replacement the following alignments may be required.

Note:

In the table below, instruments, test points and instrument readings are listed in this order.

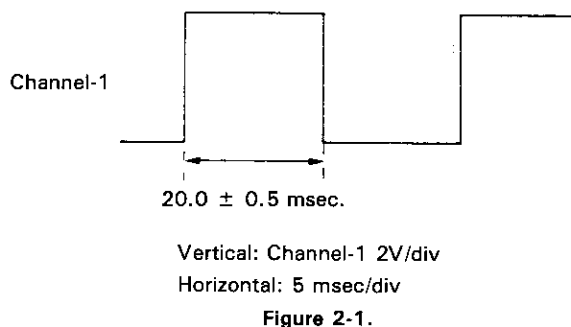
• ADJUSTMENT OF SERVO CIRCUIT

Tracking preset adjustment: R707

Oscilloscope	CH-1: TP701	Shown in Figure 2-1
--------------	-------------	---------------------

(Internal Trigger: CH-1(+) Side)

1. Insert the alignment tape (VROCPSV) into the unit.
2. Playback the tape and set the playback tracking control at the "center click" position.
3. Adjust R707 (preset control) to provide the waveform.



Adjustment of the playback switching point: R720

Oscilloscope	CH-1: TP703 CH-2: video output terminal	Shown in Figure 2-2
--------------	--	---------------------

1. Insert the alignment tape (VROCPSV) into the unit.
2. Using the puls (-) trigger slope of the oscilloscope, adjust R720 (SW POINT) to provide a waveform of 6.5 ± 0.5 H as shown in Fig. 2-2.
3. Disconnect the oscilloscope.
4. Remove the alignment tape.

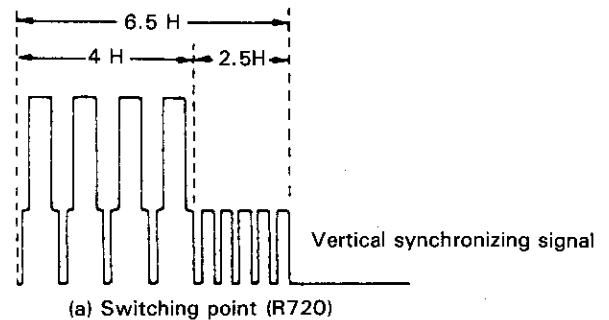


Figure 2-2.

• ADJUSTMENT OF Y/C CIRCUIT

Adjustment of EE level: R253

Note:

Connect a 75 ohm resistor between the video output and ground.

Oscilloscope	Video Output Terminal	Shown in Figure 2-3
--------------	-----------------------	---------------------

(External Trigger: TP2201 on Main PWB.)

1. Put the unit in the record mode.
2. Apply a colour bar signal to the unit.
3. Adjust R253 (EE level control) so that the waveform.
4. Remove the 75 ohm resistor.

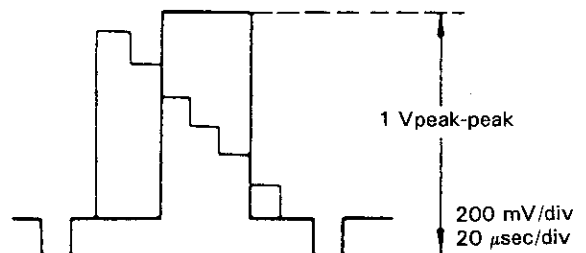


Figure 2-3.

Adjustment of playback video signal level: R209

Note:

Connect a 75 ohm resistor between the video output and ground.

Oscilloscope	Video Output Terminal	Shown in Figure 2-4
--------------	-----------------------	---------------------

(External Trigger: TP2201)

SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE:

BE SURE TO USE GENUINE PARTS FOR SECURING THE SAFETY AND RELIABILITY OF THE SET. PARTS MARKED WITH "Δ" AND PARTS SHADED (IN BLACK) ARE ESPECIALLY IMPORTANT FOR MAINTAINING THE SAFETY AND PROTECTING ABILITY OF THE SET.

BE SURE TO REPLACE THEM WITH PARTS OF SPECIFIED PART NUMBER.

SAFETY NOTES:

1. DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.
2. SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.

NOTES:

1. The unit of resistance "ohm" is omitted ($k = 1000 \text{ ohm}$, $M = 1 \text{ Meg ohm}$).
2. All resistors are 1/8 watt, unless otherwise noted.
3. The unit of capacitance "F" is omitted ($\mu = \mu F$, $p = pF$).

VOLTAGE MEASUREMENT CONDITIONS:

1. DC voltages are measured between points indicated and chassis ground by VTVM, with AC240V/50Hz supplied to unit and all controls are set to normal viewing picture unless otherwise noted.
2. Voltages are measured with 10000 μV B & W or colour signal.

WAVEFORM MEASUREMENT CONDITIONS:

10000 μV 87.5 percent modulated colour bar signal is fed into tuner:

CAUTION:

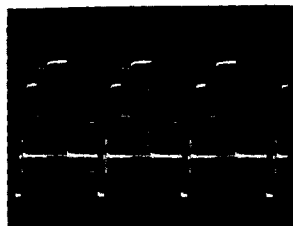
This circuit diagram is original one. Therefore there may be a slight difference from yours.

WAVE FORMS

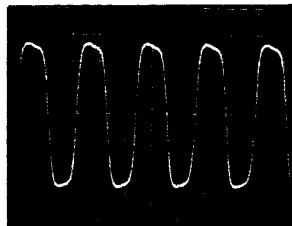
SYSTEM CONTROL, SERVO, IF PWBs



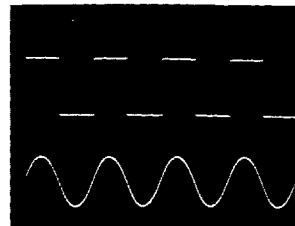
Video output terminal
(Video output is shorted with
a 75 ohm resistor.)
Video signal
200mV/Division
20 μ sec/Division
—Playback mode—



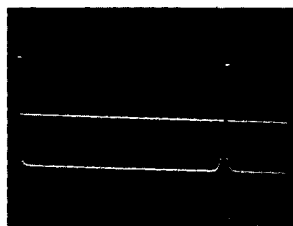
Video output terminal (E-E level)
(Video output is shorted with
a 75 ohm resistor.)
Video signal
200mV/Division
20 μ sec/Division
—Record mode—



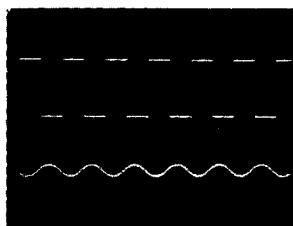
AY plug ② pin
4.43 MHz oscillation signal
200mV/Division
0.1 μ sec/Division



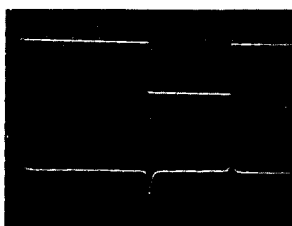
IC702 ⑭ pin
Capstan frequency generator pulse
(output)
2V/Division
0.5msec/Division
Connector AB ③ pin
Capstan frequency generator signal
(input)
1V/Division
0.5msec/Division
—Record mode—



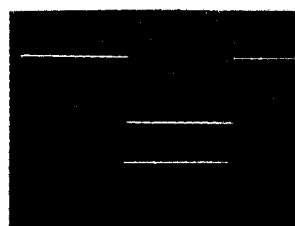
IC702 ⑩ pin
Drum phase generator pulse
(output)
2V/Division
5msec/Division
Connector AC ① pin
Drum phase generator pulse
(input)
200mV/Division
5msec/Division
—Record mode—



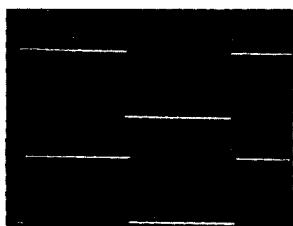
IC702 ⑮ pin
Drum frequency generator pulse
(output)
2V/Division
1msec/Division
Connector AC ③ pin
Drum frequency generator signal
(input)
50mV/Division
1msec/Division
—Record mode—



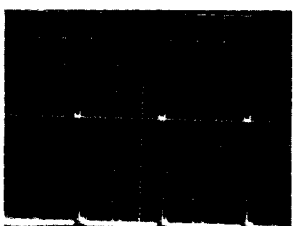
TP702
Playback control pulse
2V/Division
5msec/Division
IC702 ③ pin
Playback control pulse
500mV/Division
5msec/Division
—Playback mode—



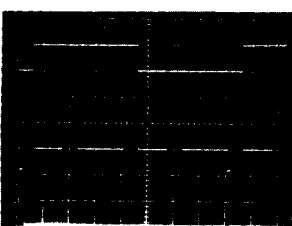
TP703
Head switching pulse
2V/Division
5msec/Division
TP701
Tracking MM pulse
2V/Division
5msec/Division
—Playback mode—



TP703
Head switching pulse
2V/Division
5msec/Division
TP701
Tracking MM pulse
2V/Division
5msec/Division
—Record mode—

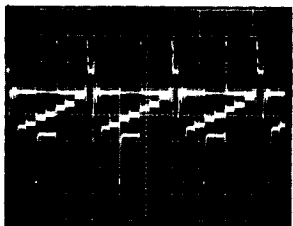


TP2201
Horizontal sync pulse
1V/Division
20 μ sec/Division
—Record mode—

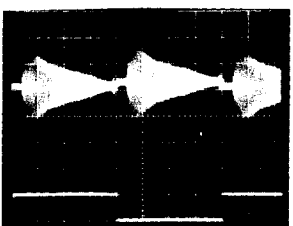


IC701 ⑨ pin
Head switching pulse
5V/Division
5msec/Division
IC701 ⑧ pin
Drum pulse generator MM
2V/Division
5msec/Division
IC701 ⑦ pin
Drum pulse generator (input)
2V/Division
5msec/Division

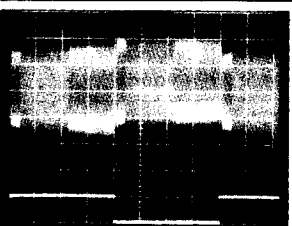
Y/C, AUDIO PWB



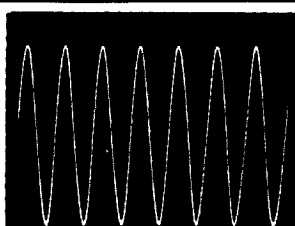
TP201
White/Dark clip signal
200mV/Division
20 μ sec/Division
—Record mode—



TP203
Playback preamp. signal
100mV/Division
5msec/Division
TP201
Head switching pulse
5V/Division
5msec/Division
—Playback mode—



TP203
Playback preamp. signal
50mV/Division
5msec/Division
TP201
Head switching pulse
5V/Division
5msec/Division
—Playback mode—



Connector BA ④, ⑤ pin
(Between Audio erase head and
Ground.)
10V/Division
10 μ sec/Division
—Record mode—

PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics identified in this manual; electrical components having such features are identified by Δ in the Replacement Parts Lists.

The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION
5. CODE

PARTS LIST				REF. NO.	PART NO.	DESCRIPTION	CODE
PARTS REPLACEMENT				Q8807	VSDTC144ES / - 1	DTC144ES	AB
				Q8808	VSDTA144ES / - 1	DTA144ES	AB
INTEGRATED CIRCUITS							
				IC701	RH-IX0322GEZZ		AS
				IC702	VHiLA7116 / - 1		AH
				IC801	RH-IX0399GEZZ		AV
				IC802	VHiBA6238AU1E		AH
				IC803	RH-IX0371GEZZ		AL
				IC951	RH-IX0037CEZZ		AF
				IC1451	VHiUPC1484CA1		AM
				IC2201	VHiBA7021 / - 1		AE
				IC5901	RH-IX0345GEZZ		AW
DIODES							
				D701	RH-DX0142CEZZ	(1SS133)	AA
				D702	RH-DX0142CEZZ	(1SS133)	AA
				D706	RH-DX0142CEZZ	(1SS133)	AA
				D707	RH-DX0142CEZZ	(1SS133)	AA
				D801	RH-DX0142CEZZ	(1SS133)	AA
				D802	RH-DX0142CEZZ	(1SS133)	AA
				D803	RH-DX0142CEZZ	(1SS133)	AA
				D804	RH-EX0163GEZZ	(HZS12EB3)	AA
				D805	RH-EX0145GEZZ	(HZS7.5EB1)	AA
				D806	VHD1SS119 / - 1	(1SS119)	AB
				D807	VHD1SS119 / - 1	(1SS119)	AB
				D808	RH-DX0142CEZZ	(1SS133)	AA
				D951	RH-EX0141GEZZ	(HZS6.2EB3)	AB
				D952	RH-EX0049CEZZ	(RD5.1EB)	AR
				D953	RH-DX0142CEZZ	(1SS133)	AA
				D954	RH-DX0142CEZZ	(1SS133)	AA
				D957	RH-DX0142CEZZ	(1SS133)	AA
				D958	RH-DX0142CEZZ	(1SS133)	AA
				D961	RH-DX0142CEZZ	(1SS133)	AA
				D2201	RH-EX0168GEZZ	(HZS15EB2)	AB
				D2202	RH-EX0168GEZZ	(HZS15EB2)	AB
				D4401	RH-EX0168GEZZ	(HZS15EB2)	AB
				D4402	RH-EX0168GEZZ	(HZS15EB2)	AB
				D5901	RH-DX0142CEZZ	(1SS133)	AA
				D8801	RH-EX0168GEZZ	(HZS15EB2)	AB
				D8802	RH-DX0142CEZZ	(1SS133)	AA
CAPACITORS							
				C707	VCEAEA0JW107M	100 μ F, 6.3V, Electrolytic	AB
				C720	VCE9EA1HW105M	1 μ F, 50V, Electrolytic (non-polar)	AC
				C810	VCE9EA1HW105M	1 μ F, 50V, Electrolytic (non-polar)	AC
				C811	VCE9EA1HW105M	1 μ F, 50V, Electrolytic (non-polar)	AC
				C951	VCEAGA1JW107M	100 μ F, 63V, Electrolytic	AC
				C957	VCEAGA1AW107M	100 μ F, 10V, Electrolytic	AB
				C1564	VCEAGA1CW227M	220 μ F, 16V, Electrolytic	AC
				C2201	VCE9EA1HW224M	.22 μ F, 50V, Electrolytic (non-polar)	AB
				C2205	VCE9EA1HW224M	.22 μ F, 50V, Electrolytic (non-polar)	AB
				C4401	VCEAEA1CW107M	100 μ F, 16V, Electrolytic	AC
				C4403	VCEAGA0JW477M	470 μ F, 6.3V, Electrolytic	AB
				C5551	VCEAEA0JW107M	100 μ F, 6.3V, Electrolytic	AB
REF. NO.	PART NO.	DESCRIPTION	CODE				
PWB-A							
	DUNTK2647HE54	System control, Servo circuit	—				
TRANSISTORS							
Q701	VS2SA933SQR1E	2SA933SQR	AB				
Q702	VS2C1740SQR1E	2SC1740SQR	AC				
Q703	VS2SA933SQR1E	2SA933SQR	AB				
706	VS2SA933SQR1E	2SA933SQR	AB				
Q801	VS2SA933SQR1E	2SA933SQR	AB				
Q802	VSDTC144ES / - 1	DTC144ES	AB				
Q803	VS2C1740SQR1E	2SC1740SQR	AC				
Q804	VS2SC2001LK - 1	2SC2001LK	AA				
Q805	VS2C1740SQR1E	2SC1740SQR	AC				
Q806	VS2C1740SQR1E	2SC1740SQR	AC				
Q807	VSDTC144ES / - 1	DTC144ES	AB				
Q808	VSDTC114ES / - 1	DTC114ES	AB				
Q809	VSDTC114ES / - 1	DTC114ES	AB				
Q810	VSDTC114ES / - 1	DTC114ES	AB				
Q951	VS2SA988-E / - 1	2SA988-E	AB				
Q953	VS2SB564-KL - 1	2SB564-K	AB				
Q954	VSDTC144ES / - 1	DTC144ES	AB				
Q955	VS2SB564-KL - 1	2SB564-K	AC				
Q956	VS2SB564-KL - 1	2SB564-K	AC				
Q957	VSDTC114ES / - 1	DTC114ES	AB				
Q1451	VS2SA933SQR1E	2SA933SQR	AB				
Q1454	VS2SC383-WT - 1	2SC383-WT	AE				
Q1555	VSDTC144ES / - 1	DTC144ES	AB				
Q4401	VS2SA933SQR1E	2SA933SQR	AB				
Q4402	VS2SA933SQR1E	2SA933SQR	AB				
Q5904	VSDTC144ES / - 1	DTC144ES	AB				
Q5905	VSDTC144ES / - 1	DTC144ES	AB				
Q5906	VSDTC144ES / - 1	DTC144ES	AB				
Q6601	VSDTC144ES / - 1	DTC144ES	AB				
Q6602	VS2SD655-DE1E	2SD655-D	AC				
Q6603	VS2SD655-DE1E	2SD655-D	AC				
Q6604	VSDTA144ES / - 1	DTA144ES	AB				
Q8801	VS2SA952LK / - 1	2SA952LK	AB				
Q8802	VSDTA124ES / - 1	DTA124ES	AB				
Q8803	VSDTA124ES / - 1	DTA124ES	AB				
Q8805	VSDTC144ES / - 1	DTC144ES	AB				
Q8806	VS2SA952LK / - 1	2SA952LK	AB				

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
TRIMMERS				INTEGRATED CIRCUITS			
C5904	RT 5- H1005AEZZ	Trimmer, OSD Character generator adj.	AC	IC201	VHi HA118026NT		AT
C5911	RT 5- H1005AEZZ	Trimmer, OSD Clock oscillator adj.	AC	IC501	VHi TA8644N/-1		AP
				IC601	VHi BA7751ALSI		AG
				IC602	VHi BA7755/-1		AD
CONTROLS				DIODES			
R707	RVR - M4421GEZZ	100K ohm, (B) Tracking preset adj.	AB	D203	VHD1SS119/-1	(1SS119)	AB
R720	RVR - M4198GEZZ	100K ohm, (B) Switching point adj.	AD	D204	VHD1SS119/-1	(1SS119)	AB
R1464	RVR - M4306GEZZ	4.7K ohm, (B) SYNC FRO adj.	AC	D207	RH-EX0374GEZZ		AA
				D501	RH-EX0374GEZZ		AA
				D503	VHD1SS198/-1	(1SS198)	AB
COILS				CAPACITORS			
L801	VP-DF101K0000	100 μ H	AB	C235	VCE9EA1EW475M	4.7 μ F, 25V, Electrolytic (non-polar)	AC
L1451	VP-DF120K0000	12 μ H	AB	C240	VCEAEA1AW107M	100 μ F, 10V, Electrolytic	AB
L2201	VP-DF221K0000	220 μ H	AB	C609	VCEAGA1CW107M	100 μ F, 16V, Electrolytic	AB
L4401	VP-DF221K0000	220 μ H	AB				
L5552	VP-DF221K0000	220 μ H	AB				
L5901	VP-MK100K0000	10 μ H	AB				
FL801	RFLC0024GEZZ	Filter	AE				
MISCELLANEOUS				CONTROLS			
	RUNTK0439GEZZ	IF Pack unit	AY	R209	RVR - M4408GEZZ	680 ohm, (B) Playback level adj.	AB
	VTUATEMB1-015	Tuner	AZ	R216	RVR - M4408GEZZ	680 ohm, (B) FM carrier adj.	AB
	RCNVR0011GEZZ	RF convertor	BB	R222	RVR - M4191GEZZ	6.8K ohm, (B) Deviation adj.	AD
X5901	RCRSB0008CEZZ	Crystal oscillator	AP	R229	RVR - M4411GEZZ	2.2K ohm, (B) White clip adj.	AB
R5918	RMP TC0038CEZZ	Package circuit	AB	R253	RVR - M4407GEZZ	470 ohm, (B) EE level adj.	AB
AA	QPLGN1078GEZZ	Plug (10 Pin)	AC	R263	RVR - M4430GEZZ	1K ohm, (B) FM level adj.	AB
AB	QS 5CN1013REZZ	Socket (10 Pin)	AD	R507	RVR - M4380GEZZ	100K ohm, (B) APC adj.	AC
AC	QPLGN0678GEZZ	Plug (6 Pin)	AB	R515	RVR - M4432GEZZ	2.2K ohm, (B) Rec Chroma Level adj.	AB
AD	QPLGN0778GEZZ	Plug (7 Pin)	AC	R609	RVR - M4439GEZZ	33K ohm, (B) Playback level adj.	AB
AE	QS 5CN0713REZZ	Socket (7 Pin)	AC	R622	RVR - M4446GEZZ	470K ohm, (B) Bias adj.	AB
AF	QPLGN0979GEZZ	Plug (9 Pin)	AC				
AG	QPLGN0478GEZZ	Plug (4 Pin)	AB				
AH	QPLGN0978GEZZ	Plug (9 Pin)	AC				
AI	QPLGN0478GEZZ	Plug (4 Pin)	AB				
AJ	QPLGN0678GEZZ	Plug (6 Pin)	AB				
AK	QPLGN0378GEZZ	Plug (3 Pin)	AB				
AL	QPLGN0578GEZZ	Plug (5 Pin)	AB				
AM	QPLGN0678GEZZ	Plug (6 Pin)	AB				
AQ	QPLGN0478GEZZ	Plug (4 Pin)	AB				
AR	QPLGN1278GEZZ	Plug (12 Pin)	AC				
J6601	QS 5CZ2112GEZZ	Socket (21 Pin)	AF				
PWB-B				COILS AND TRANSFORMER			
	DUNTK2664TM51	Y/C, Audio circuit	—	DL201	RCi LZ0183GEZZ	Coil	AK
				DL501	RCi LZ0191GEZZ	Coil	AM
				FL601	RCi LF0076GEZZ	Coil	AF
				FL602	RCi Li 0060GEZZ	IF Coil	AD
				L201	VP-MK101K0000	100 μ H	AB
				L202	VP-XF560K0000	56 μ H	AB
				L203	VP-XF8R2K0000	8.2 μ H	AB
				L204	VP-XF680K0000	68 μ H	AB
				L205	VP-XF150K0000	15 μ H	AB
				L208	VP-XF151K0000	150 μ H	AB
				L209	VP-XF820K0000	82 μ H	AB
				L210	VP-XF151K0000	150 μ H	AB
				L211	VP-DF221K0000	220 μ H	AB
				L212	VP-DF560K0000	56 μ H	AB
				L502	VP-MK180J0000	18 μ H	AB
				L504	VP-XF390K0000	39 μ H	AB
				L505	VP-XF221K0000	220 μ H	AB
				L506	VP-XF221K0000	220 μ H	AB
				L507	VP-MK561K0000	56 μ H	AB
				L601	VP-YF562J0000	5.6mH	AC
				L602	VP-YF471K0000	470 μ H	AC
				L603	VP-DF221K0000	220 μ H	AB
				T601	RTRNH0046GEZZ	Oscillator transformer	AE
TRANSISTORS							
Q204	VS2SD471-KL-1	2SD471-KL	AD				
Q205	VS2SC1623L51E	2SC1623L	AB				
Q502	VS2SC1623L51E	2SC1623L	AB				
Q504	VS2SC2001LK-1	2SC2001LK	AA				
Q505	VS2SC1623L51E	2SC1623L	AB				
Q506	VS2SA812-M51E	2SA812-M	AC				
Q507	VS2SC1623L51E	2SC1623L	AB				
Q508	VS2SC1623L51E	2SC1623L	AB				
Q602	VS2SD592ARS-1	2SD592ARS	AC				

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
MISCELLANEOUS				CAPACITORS			
FL201	RMP TD0254GEZZ	Package circuit	AG	C2802	VCSATA1VE105K	1μF, 35V, Tantalum (non-polar)	AD
FL501	RMP TD0239GEZZ	Package circuit	AG	C2808	VCSATA1VE105K	1μF, 35V, Tantalum (non-polar)	AD
FL502	RMP TD0256GEZZ	Package circuit	AF	C2849	VCE9EA1HW105M	1μF, 50V, Electrolytic (non-polar)	AC
X501	RCRSB0002CEZZ	Crystal oscillator	AM	C2850	VCE9EA1HW105M	1μF, 50V, Electrolytic (non-polar)	AC
BA	QPLGN0580GEZZ	Plug (5 Pin)	AB	C2857	VCSATA1CE106K	10μF, 16V, Tantalum (non-polar)	AC
BB	QPLGN0778GEZZ	Plug (7 Pin)	AC	C2858	VCSATA1CE106K	10μF, 16V, Tantalum (non-polar)	AC
BC	QS0CN0779GEZZ	Socket (7 Pin)	AC				
BD	QS0CN0979GEZZ	Socket (9 Pin)	AB				
BE	QS0CN0879GEZZ	Socket (8 Pin)	AC				
BF	QS0CN0679GEZZ	Socket (6 Pin)	AC				
PWB-H				TRIMMERS			
	DUNTK2544HE56	Operation circuit	—	C2804	RT0-H0011TAZZ	Write clock VCO	AD
DIODES				C2810	TR0-H0011TAZZ	Read clock VCO	AD
D8101	RH-PX0032GEZZ	(1SS133)	AC	COILS			
D8102	RH-PX0124GEZZ		AB	FL2801	RFLN0021GEZZ	Filter	AB
D8106	RH-PX0124GEZZ		AB	2807	RFLN0021GEZZ	Filter	AB
D8109	RH-PX0124GEZZ		AB	FL2808	RFLN0013CEZZ	Filter	AC
D8110	RH-DX0142CEZZ		AA	FL2809	RFLN0013CEZZ	Filter	AC
CONTROL				FL2810	RFLN0013CEZZ	Filter	AC
R8116	RVR-B4286GEZZ	20K ohm, (B) Picture tone adj.	AD	FL2811	RFLN0021GEZZ	Filter	AB
MISCELLANEOUS				2814	RFLN0021GEZZ	Filter	AB
SW8101	QSW-K0033GEZZ	Switch, Power	AB	FL2821	RFLN0021GEZZ	Filter	AB
SW8102	QSW-K0033GEZZ	Switch, Eject	AB	2825	RFLN0021GEZZ	Filter	AB
SW8104	QSW-S0122GEZZ	Switch, Beeper	AD	FL2830	RFLN0021GEZZ	Filter	AB
ALM8101	RALMB0010GEZZ	Alarm	AD	FL2831	RFLN0013CEZZ	Filter	AC
PWB-S(1)				MISCELLANEOUS			
	DUNTK2648HE50	Digital circuit	—	FL2832	RMP TD0223GEZZ	Package circuit	AE
TRANSISTORS				FL2833	RMP TD0223GEZZ	Package circuit	AE
Q2803	VS2C1740SQR1E	2SC1740SQR	AC	FL2834	RMP TD0254GEZZ	Package circuit	AG
Q2804	VS2C1740SQR1E	2SC1740SQR	AC	R2815	RMP TC0122GEZZ	Package circuit	AD
Q2805	VS2C1740SQR1E	2SC1740SQR	AC	R2822	RMP TC0122GEZZ	Package circuit	AD
Q2806	VS2SA933SQR1E	2SA933SQR	AB	R2829	RMP TC0122GEZZ	Package circuit	AD
INTEGRATED CIRCUITS				X2801	RCRSB0078GEZZ	Crystal oscillator	AH
IC2801	RH-iX0366GEZZ		AX	FB2801	RBLN-0014EEZZ	Balun	AB
IC2802	RH-iX0388GEZZ		BA	FB2802	RBLN-0014GEZZ	Balun	AB
IC2803	RH-iX0388GEZZ		BA	FB2803	RBLN-0014GEZZ	Balun	AB
IC2804	RH-iX0388GEZZ		BA	SB	QS0CN2113REZZ	Socket (21 Pin)	AD
IC2805	VHiM52681P/-1		AX				
IC2806	VHiM52678P/-1		AS				
IC2807	VHiBA7041/-1		AG				
IC2808	VHiBA7041/-1		AG				
DIODES				PWB-S(2)			
D2801	RH-DX0142CEZZ	(1SS133)	AA		DUNTK2649HE50	Digital circuit	—
D2802	RH-DX0142CEZZ	(1SS133)	AA	TRANSISTORS			
D2803	RH-DX0142CEZZ	(1SS133)	AA	Q2601	VS2SA933SQR1E	2SA933SQR	AB
				Q2602	VS2C1740SQR1E	2SC1740SQR	AC
				2605	VS2C1740SQR1E	2SC1740SQR	AC
				Q2606	VS2SA933SQR1E	2SA933SQR	AB
				Q2702	VS2C1740SQR1E	2SC1740SQR	AC
				Q2703	VS2C1740SQR1E	2SC1740SQR	AC
				Q2704	VS2SA933SQR1E	2SA933SQR	AB

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
Q2705	VS2C1740SQR1E	2SC1740SQR	AC	PWB-T			
Q2706	VS2C1740SQR1E	2SC1740SQR	AC		DUNTK2548HE58	Timer circuit	—
Q2707	VSDTC144ES- / 1	DTC144ES	AB	TRANSISTORS			
INTEGRATED CIRCUITS				Q5001	VS2SA937-Q / - 1	2SA937-Q	AC
IC2601	VHi M51271SP- 1		AR	Q5002	VSDTC144F / - 1	DTC144F	AB
IC2602	VHi BA7021 / - 1		AE	Q5003	VS2SA937-Q / - 1	2SA937-Q	AC
IC2701	VHi M51272P / - 1		AR	Q5004	VSDTC124F / - 1	DTC1214F	AC
IC2702	VHi M51271SP- 1		AR	Q5005	VSDTC144F / - 1	DTC144F	AB
IC2703	VHi BA7021 / - 1		AE	INTEGRATED CIRCUIT			
IC2704	VHi BA7021 / - 1		AE	IC5001	RH- i X0370GEZZ		AQ
TRIMMERS				IC5002	RH- i X0439CEZZ		BA
C2609	RT ̄- H1005AEZZ	Chroma decode clock osc adj.	AC	DIODES			
C2727	RT ̄- H1005AEZZ	Chroma carrir clock osc adj.	AC	D5001	RH- DX0053GEZZ		AA
CONTROLS				D5011	RH- DX0053GEZZ		AA
R2606	RVR- M4419GEZZ	47K ohm, (B) Colour level adj.	AB	5016	RH- DX0053GEZZ		AA
R2619	RVR- M4409GEZZ	1K ohm, (B) 1H Gain adj.	AB	D5018	RH- DX0053GEZZ		AA
R2631	RVR- M4419GEZZ	47K ohm, (B) Burst cleaning adj.	AB	5022	RH- DX0053GEZZ		AA
R2702	RVR- M4415GEZZ	10K ohm, (B) Carry BAL adj.	AB	D5024	RH- DX0053GEZZ		AA
R2709	RVR- M4419GEZZ	47K ohm, (B) Carry BAL adj.	AB	D5025	RH- DX0053GEZZ		AA
R2710	RVR- M4419GEZZ	47K ohm, (B) Carry BAL adj.	AB	D5027	RH- DX0053GEZZ		AA
R2742	RVR- M4419GEZZ	47K ohm, (B) Burst cleaning adj.	AB	D5031	RH- DX0053GEZZ		AA
COILS				D5032	RH- DX0053GEZZ		AA
DL2601	RCi LZ0255GEZZ	Chroma delay line	AK	CONTROL			
FL2601	RCi LV0047GEZZ	Chroma band pass filter	AE	R5029	RVR- B4287GEZZ	200K ohm, (B) Playback tracking adj.	AD
FL2701	RCi LV0047GEZZ	Chroma band pass filter	AE	TRIMMER			
FL2702	RCi LV0047GEZZ	Chroma band pass filter	AE	C5006	RT ̄- H1005AEZZ	Trimmer	AC
L2601	RCi LZ0472CEZZ	Colour separate	AD	FILTER			
L2604	VP- DF101K0000	100μH	AB	FL5001	RFi LCO024GEZZ	Filter	AD
L2606	VP- XF8R2K0000	8.2μH	AB	MISCELLANEOUS			
L2701	VP- DF101K0000	100μH	AB	DG5001	RRMCU0034GEZZ	Remote receiver	AM
L2702	VP- DF101K0000	100μH	AB	R5001	VVKFV183 / - 1	Display	AY
MISCELLANEOUS				R5002	RMP TC0021CEZZ	Package circuit	AB
FL2602	RMP TD0254GEZZ	Package circuit	AG	R5022	RMP TC0037CEZZ	Package circuit	AC
X2601	RCRSB0008CEZZ	Crystal oscillator	AP	X5001	RCRSB0006GEZZ	Crystal	AK
X2701	RCRSB0008CEZZ	Crystal oscillator	AP	SW5001	QSW- K0033GEZZ	Switch, Set	AB
SC	QS ̄CN2195GEZZ	Socket (21 Pin)	AD	SW5002	QSW- K0033GEZZ	Switch, (+)	AB
SD	QPL GN1278GEZZ	Plug (12 Pin)	AC	SW5003	QSW- K0033GEZZ	Switch, (-)	AB
SI	QPL GN0278GEZZ	Plug (2 Pin)	AA	SW5004	QSW- K0033GEZZ	Switch, Program	AB
SH	QPL GN0478GEZZ	Plug (4 Pin)	AB	SW5005	QSW- K0033GEZZ	Switch, MT (+)	AB
				SW5006	QSW- K0033GEZZ	Switch, M (-)	AB
				SW5007	QSW- K0033GEZZ	Switch, Timer ON/OFF	AB
				SW5008	QSW- K0033GEZZ	Switch, Program clear	AB
				SW5012	QSW- K0033GEZZ	Switch, Record return	AB
				SW5013	QSW- K0033GEZZ	Switch, Clock	AB
				SW5014	QSW- K0033GEZZ	Switch, Stop	AB

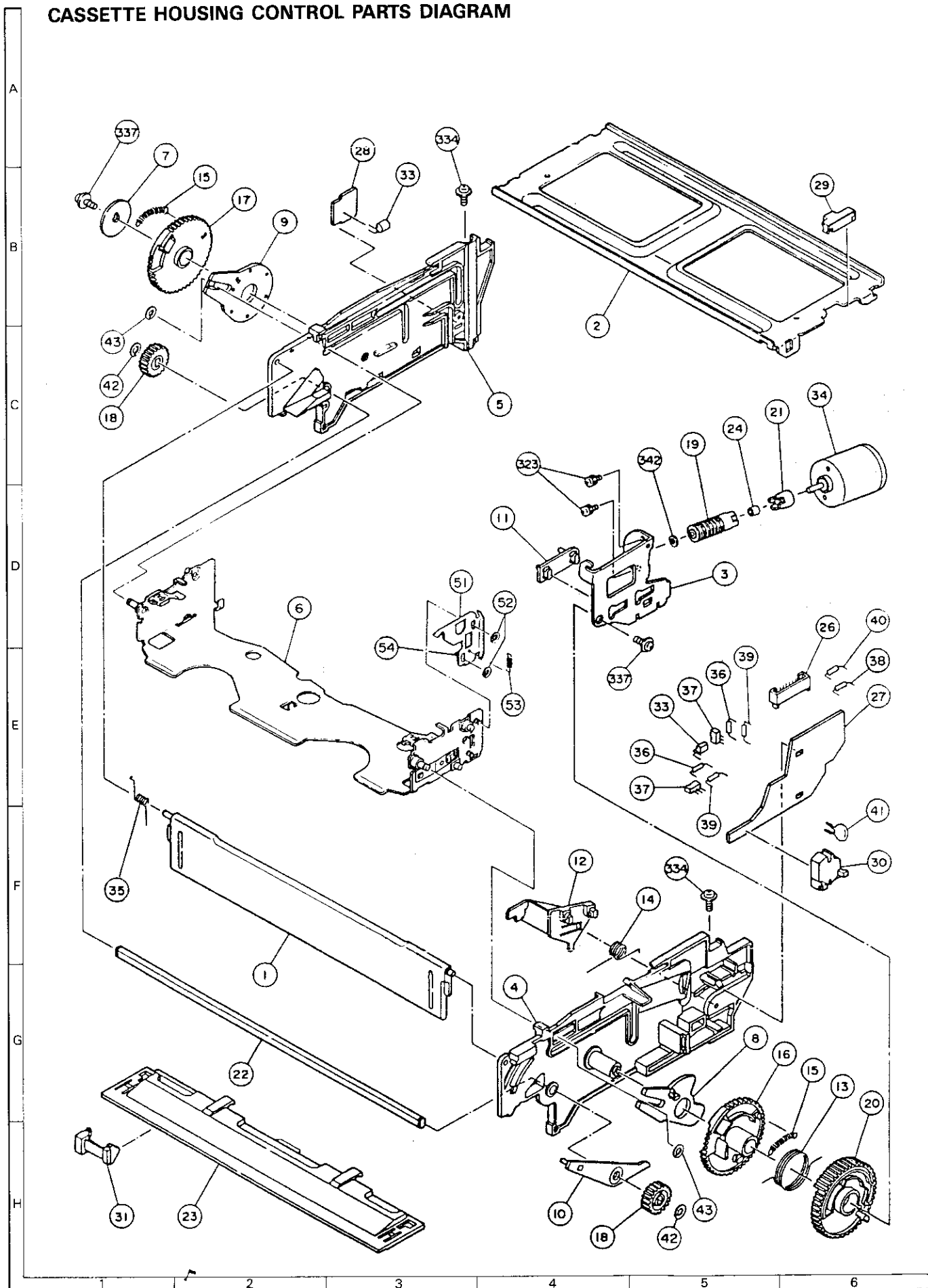
REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE			
SW5015	QSW- K0033GEZZ	Switch, Fast-Forward	AB	DIODE						
SW5016	QSW- K0033GEZZ	Switch, Record	AB	D8901	RH- DX0142CEZZ	(1SS133)	AA			
SW5017	QSW- K0033GEZZ	Switch, Pause	AB							
SW5018	QSW- K0033GEZZ	Switch, Rewind	AB	MISCELLANEOUS						
SW5019	QSW- K0033GEZZ	Switch, PS	AB	GA	QPLGN0620REZZ	Plug (6 Pin)	AB			
SW5020	QSW- K0033GEZZ	Switch, Channel up	AB							
SW5021	QSW- K0033GEZZ	Switch, Channel down	AB	DIGITAL CIRCUIT (A) SUB PWB						
SW5025	QSW- K0033GEZZ	Switch, Display	AB	IC2901 IC2902 IC2903	VHI SN74LS04- 1 VHI SN74LS00- 1 VHI SN74LS74A/	Digital circuit (A) sub circuit	—			
SW5026	QSW- K0033GEZZ	Switch, Reset	AB							
SW5027	QSW- K0033GEZZ	Switch, Memory	AB							
SW5028	QSW- K0033GEZZ	Switch, All clear	AB	INTEGRATED CIRCUITS						
SW5029	QSW- S0122GEZZ	Switch, Tuner preset	AD	IC2901 IC2902 IC2903	VHI SN74LS04- 1 VHI SN74LS00- 1 VHI SN74LS74A/	Digital circuit (A) sub circuit	—			
SW5030	QSW- S0123GEZZ	Switch, Colour - Auto - Blue mute	AD							
TA	QPLGN0680GEZZ	Plug (6 Pin)	AB							
TO	QPLGN0278GEZZ	Plug (2 Pin)	AA	DIODES						
	QPLGN0428TAZZ	Plug (4 Pin),TP5001-5004	AB	D2901 D2902	VHD1SS119/ / - 1 VHD1SS119/ / - 1	(1SS119) (1SS119)	AB AB			
PWB-X								MISCELLANEOUS		
	DUNTK2486TM52	Head amplifier circuit	—	SM				QPLGN0920REZZ	Plug (9 Pin)	AB
TRANSISTORS					PWB-P					
Q301	VS2SC2059KN1E	2SC2059K	AC		RDENT0261GEZZ	Power circuit	—			
Q302	VS2SC1623L51E	2SC1623L	AB	TRANSISTORS						
Q303	VSDTC144EK/ - 1	DTC144EK	AB	△ Q901	95KUAD0088AZ	2SD1565	AF			
INTEGRATED CIRCUIT				△ Q902	95KUAA0069AZ	2SA1013	AE			
IC301	VHIBA7252S/ - 1		AH	△ Q903	95KUAB0049DZ	2SB703	AG			
COILS				△ Q904	95KUAD0088AZ	2SD1565	AF			
L303	VP- MK101K0000	100μH	AB	INTEGRATED CIRCUITS						
L304	VP- XF680K0000	68μH	AB	△ IC901	95KUCB0029AZ		AK			
L305	VP- XF330K0000	33μH	AB	IC902	95KUCZ0097ZZ		AG			
L306	VP- XF270K0000	27μH	AB	DIODES						
L307	VP- XF220K0000	22μH	AB	△ D901	95KUBC0112AZ	(11E1)	AB			
L309	VP- XF221K0000	220μH	AB							
MISCELLANEOUS				△ 904	95KUBC0112AZ	(11E1)	AB			
FB301	RBLN- 0013GEZZ	Balun	AB	D905	95KUBD0430AZ	(RD18ESB)	AB			
FB302	RBLN- 0013GEZZ	Balun	AB	△ D906	95KUBC0110AZ	(S2V10)	AD			
XA	QPLGN0780GEZZ	Plug (7 Pin)	AC							
ZA	QSOCN0596GEZZ	Socket (5 Pin)	AB	△ 909	95KUBC0110AZ	(S2V10)	AD			
	QPLGN0229TAZZ	TP301-302	AB	△ D910	95KUBC0125BZ	(ERA15-02)	AB			
SYSTEM CONTROL SUB CIRCUIT				D911	95KUBC0125BZ	(ERA15-02)	AB			
	DUNTK2748HE00	System control sub circuit	—	D912	95KUBD0135AZ	(RD33EB)	AC			
TRANSISTORS				△ D913	95KUBC0125AZ	(ERA15-01)	AC			
Q8901	VSDTA124F/ / - 1	DTA124F	AC							
Q8902	VSDTA124F/ / - 1	DTA124F	AC	△ 920	95KUBC0125AZ	(ERA15-01)	AC			
INTEGRATED CIRCUIT				D921	95KUBD0439AZ	(RD12ESB)	AB			
IC8901	VHITC4077BP- 1		AD	D922	95KUBD0429AZ	(RD5.6ESB)	AB			

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
CAPACITORS				CABINET PARTS			
△ C901	95KUGFJ104BX	.1μF, 250V, Metalized polypro	AH		LHLDZ5242EHZZ	Cabinet, Top	AM
△ C902	95KUGAE222EP	2200μF, 35V, Electrolytic	AH		LHLDZ5260ENZZ	Cabinet, Bottom	AE
△ C904	95KUGAD222BU	2200μF, 25V, Electrolytic	AG		LHLDZ5201EHZZ	Battery cover	AC
△ C911	95KUGAC222BU	2200μF, 16V, Electrolytic	AF		LHLDZ5153EHZZ	Infrared filter	AG
△ C912	95KUGAB221BU	220μF, 10V, Electrolytic	AC		JBTNK5172EHZZ	Rubber key	AL
△ C914	95KUGAE102BU	1000μF, 35V, Electrolytic	AF		QCNCG5126EHZZ	Connector	AC
RESISTORS					QCNCG5135EHZZ	Connector	AD
△ R901	95KUEZ0085ZZ	12M ohm, 1/2W, Carbon	AE		PCUSS5069EHZZ	Cushion	AA
△ R908	95KUZZ0083ZZ	8.2 ohm, 1/4W, Fusible	AL		XJBSF23P06000	Screw	AA
△ R915	95KUEZ0189ZZ	.27 ohm, 1/4W, Fusible	AC		XJPSD14P06000	Screw	AA
△ R919	95KUZZ0029ZZ	4.7 ohm, 1/4W, Fusible	AE	THE OTHER PARTS			
△ R924	95KUEZ0248ZZ	.2 ohm, 1/4W, Fusible	AC		TGAN-1024CEZZ	Guarantee card	AB
△ R925	95KUEZ0226ZZ	.15 ohm, 1/4W, Fusible	AC		TINS-1026GEZZ	Operation manual	AL
FILTER AND TRANSFORMER					RRMCG0322GESA	Remote control transmitter	AL
△ L901	95KUKZ0025ZZ	Line filter	AM		RCNVR0011GEZZ	RF convertor	BB
△ T1	95K116030382	Power transformer	BA	MECHANISM CHASSIS PARTS			
CONTROLS				1	RH-PX0090GE01	LED sensor	AH
VR901	95KUFBA502CB	5K ohm, (B) All time 5V adj.	AD	3	DDRMU0002HE17	Upper drum ass'y	BH
VR902	95KUFBA102CB	1K ohm, (B) All time 12V adj.	AC	4	PGIDC0035GEFW	V base	AM
MISCELLANEOUS				5	LANGF9264GEZZ	Pinch roller link plate ass'y	AK
△ F901	95KPJC0308ZZ	Fuse, T1A, 250V	AE	6	DDRML0008HE04	Lower drum ass'y	BD
△ PA	95KPKZ0450ZZ	Plug (4 Pin)	AD	7	LANGF9329GEZZ	Mechanism control unit angle	AG
PB	95KECB7228ZZ	Plug (3 Pin)	AF	11	PBRKZ0003GEZZ	Tension band ass'y	AD
PC	95KPKZ0446ZZ	Plug (6 Pin)	AC	12	—	Main chassis	—
REMOTE CONTROL TRANSMITTER CIRCUIT				13	LCHSS0011GEZZ	Guide plate ass'y	AG
	RRMCG0322GESA	Remote control transmitter	—	14	LDAIH3015GEZZ	Audio/Control head plate	AF
TRANSISTOR				15	LHLDZ1435GEZZ	Loading motor holder	AC
	VS2SC1623L6-1	2SC1623L6	AB	17	LHLDP1045GEZZ	Cassette LED holder	AE
INTEGRATED CIRCUIT				18	LPOLM0022GEZZ	Pole base A ass'y	AM
	RH-IX5001EHZZ	M50930	AY	19	LPOLM0023GEZZ	Pole base B ass'y	AM
DIODE AND CRYSTAL				20	MARMM0052GEZZ	Loading arm A ass'y	AE
	VHDRLS-73// -1	RLS-73	AB	21	MARMM0053GEZZ	Loading arm B ass'y	AE
	RH-PX0068PAZZ	GL521	AD	22	MARMM0054GEZZ	Tension arm ass'y	AE
	RCRSP0092EHZZ	Crystal (32.768kHz)	AE	23	MARMP0035GEZZ	Full erase head arm	AB
	RCRSP0089EHZZ	Crystal (CSU455P)	AD	24	MLEVFO229GEZZ	Pinch roller lever ass'y	AH
MISCELLANEOUS				25	MLEVFO225GEZZ	Brake drive lever ass'y	AF
	QCNTM5065HEZZ	Battery terminal (+)	AG	27	MLEVPO083GEZZ	Auxiliary brake lever	AA
	QCNTM5066HEZZ	Battery terminal (-)	AG	28	MLEVPO084GEZZ	Torque change lever	AA
	QCNTM5067HEZZ	Battery terminal (+, -)	AG	29	MLEVPO085GEZZ	Take-up brake lever	AC
				30	MLEVPO086GEZZ	Supply brake lever	AC
				31	MLEVPO087GEZZ	Tension adjusting lever	AC
				32	MLEVPO123GEZZ	Tension release lever	AB
				33	MSLIF0023GEZZ	Shifter ass'y (A)	AE
				34	MSLIF0024GEZZ	Shifter ass'y (B)	AD
				35	MSPRC0006GEFJ	Audio/Control heads spring	AA
				37	MSPRC0084GEFJ	Audio/Control heads arm spring	AA
				39	MSPRC0086GEFJ	Brake lock spring	AA
				40	MSPRT0216GEFJ	Pinch pressure spring	AB
				41	MSPRT0217GEFJ	Full erase head arm spring	AA
				42	MSPRT0218GEFJ	Tension arm spring	AA
				43	MSPRT0241GEFJ	Auxiliary brake spring	AA
				44	MSPRT0220GEFJ	Loading gear reciprocating spring	AA
				45	MSPRT0221GEFJ	Main brake spring	AA
				48	NBLTK0039GE00	Loading belt	AB

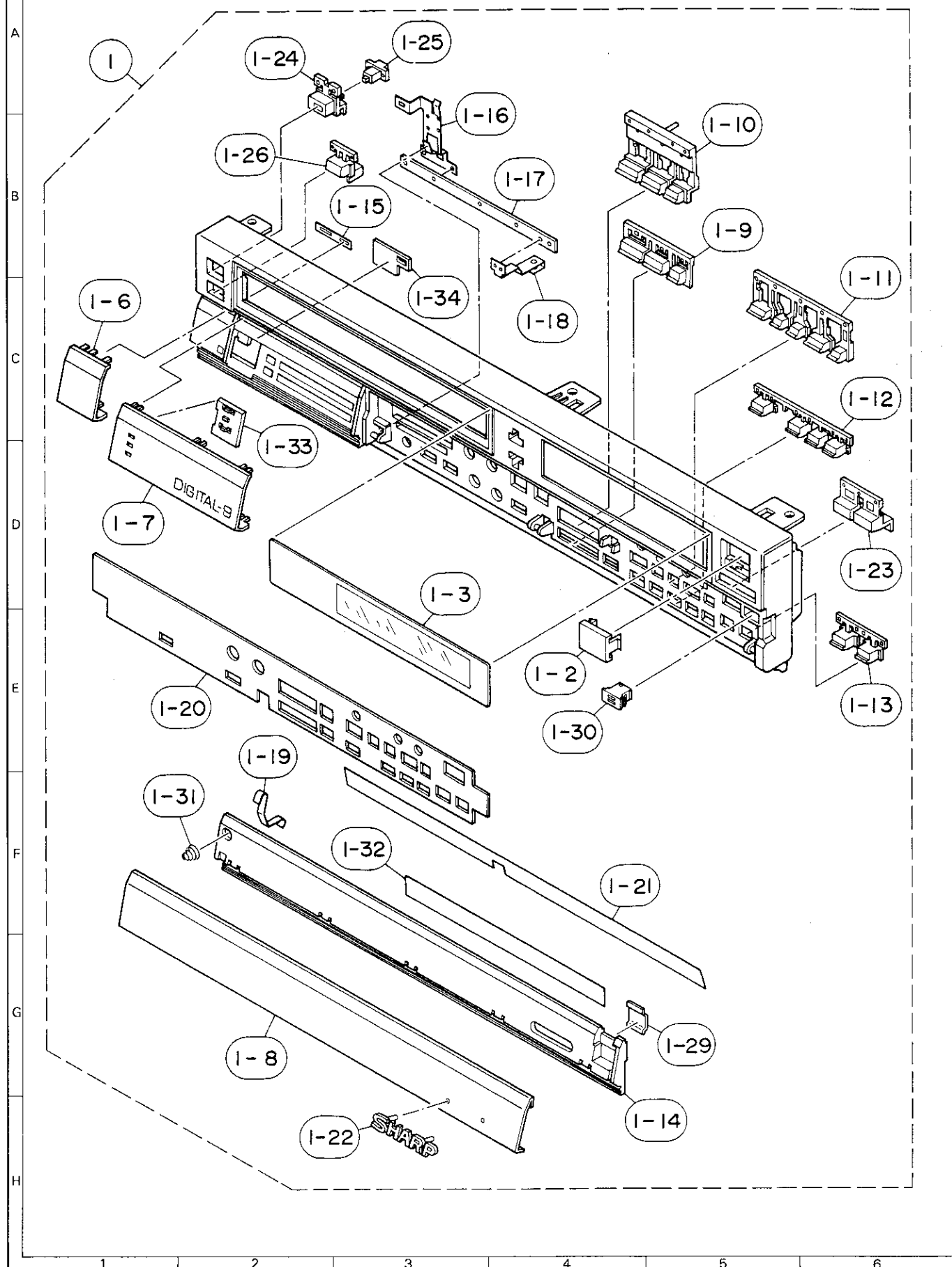
REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
51	NDAI V1032GEZZ	Supply reel disk ass'y	AF	118	QS 0CN0712REZZ	Socket, 7 pin (NA) (Reel sensor PWB)	AC
52	NDAI V1038GEZZ	Take-up reel disk ass'y	AF	120	RPLU - 0080GEZZ	DD brake solenoid	AK
54	NGERH1092GEZZ	Half load cam	AD	121	MLEVP0102GEZZ	DD brake lever	AB
55	NGERH1109GEZZ	Brake cam	AC	122	LANGF9290GEFJ	DD brake fixing angle	AD
56	NGERH1108GEZZ	Master cam	AC	123	MSPRC0116GEFJ	Spring, for release	AA
57	NGERH1075GEZZ	Loading gear (A) ass'y	AD	124	MSPRT0239GEFJ	Spring, for DD brake lever	AA
58	NGERH1076GEZZ	Loading gear (B) ass'y	AC	128	PSPAB0019GEFW	Spacer, for DD solenoid	AC
59	NGERH3032GEZZ	Segment gear ass'y	AE	129	LANGT9105GEFW	Heater bracket	AC
60	NR 0LM0016GEFW	Segment gear roller	AA	130	MSPRC0085GEFJ	Retaining guide adjusting spring	AA
61	NPLYV0036GEZZ	Loading motor pulley	AB	131	MSPRD0078GEFJ	Half load lever spring	AB
63	NPLYV0118GEZZ	Loading block ass'y	AK	132	LANGJ0021GEFW	Connection lever	AD
64	NPLYV0111GEZZ	Reel drive unit	AR	133	MLEVC0018GEZZ	Half load lever ass'y	AL
65	NR 0LP0046GEZZ	Supply impedance roller	AH	134	MLEVF0263GEZZ	Center lever ass'y	AL
66	NR 0LP0047GEZZ	Guide roller ass'y	AH	135	MLEVF0262GEZZ	Cam lever ass'y	AH
67	NR 0LR0013GEZZ	Pinch roller ass'y	AN	136	MSLIF0030GEZZ	Half load shifter	AE
68	PGI DP0018GEFW	Supply impedance sub shaft	AB	CASSETTE HOUSING CONTROL PARTS			
69	NSFTZ0026GEFD	Brake lock shaft	AA		CHLDX3043GE00	Cassette housing ass'y (Note that ref. No.1 "Cassette cover" is not shipped together.)	BC
73	PGI DP0016GEFW	Retaining guide	AE	1	HDECQ0477GESA	Cassette cover	AH
75	PGI DH0029GEZZ	Supply impedance flange	AB	2	LANGF9323GEFW	Top plate	AG
78	QBRSK0017GEZZ	Earth brush ass'y	AD	3	LANGF9305GEZZ	Motor angle ass'y	AC
80	QPLGN0229TAZZ	Plug, 2 pin (Reel sensor PWB)	AB	4	LHL DX1007GE00	Frame (Right)	AG
82	QPLGN0278GEZZ	Plug, 2 pin (Mechanism relay PWB)	AA	5	LHL DX1006GE00	Frame (Left)	AH
83	QPLGN0280GEZZ	Plug, 2 pin (Loading motor PWB)	AB	6	LHL DX3037GEZZ	Slider ass'y	AQ
84	QPLGN0880GEZZ	Plug, 8 pin	AC	7	MARMM0051GEFW	Drive washer	AB
88	QPWBF2576GEZZ	Reel sensor PWB	AE	8	MARMP0029GEZZ	Drive arm (Right)	AB
89	QPWBF2583GEZZ	Loading motor PWB	AA	9	MARMP0030GEZZ	Drive arm (Left)	AB
90	QPWBF2582GEZZ	Full erase head PWB	AA	10	MARMP0031GEZZ	Cassette cover arm	AA
91	QSW- F0024GEZZ	Shafter switch (Reel sensor PWB)	AD	11	MLEVP0080GEZZ	Timing lever	AA
92	QSW- R0019GEZZ	Cam switch	AM	12	MLEVP0081GEZZ	Cover open lever	AB
93	RDTCH0018GEZZ	Dew sensor	AG	13	MSPRD0065GEFJ	Drive reciprocating spring	AA
95	RH- PX0099GEZZ	Cassette LED	AG	14	MSPRD0066GEFJ	Cover open lever spring	AA
96	RHEDT0019GEZZ	Full erase head ass'y	AP	15	MSPRT0215GEFJ	Drive spring	AA
97	RHEDU0058GEZZ	Audio/Control heads ass'y	AT	16	NGERH1093GEZZ	Drive gear (Right)	AB
98	VHi M5F7805L-1	Transistor	AE	17	NGERH1070GEZZ	Drive gear (Left)	AB
99	RM 0TM1042GEZZ	Loading motor	AM	18	NGERH1071GEZZ	Phase gear	AA
100	RM 0TP1084GEZZ	DD motor ass'y	BB	19	NGERW1018GEZZ	Worm gear	AB
101	RM 0TN2010GEZZ	Capstan DD Motor	BC	20	NGERW1026GEZZ	Worm wheel gear	AC
102	RPLU - 0075GEZZ	Brake solenoid	AG	21	NPLYV0100GEZZ	Motor pulley	AA
104	VCKYAT1HD102M	1000pF, 20%, 50V (C8001,8002) (Reel sensor PWB)	AA	22	NSFTL0442GEFD	Main shaft	AD
105	VRD - RA2EE473J	47K ohm, 5%, 1/4W, Carbon (R8002,8004) (Reel sensor PWB)	AA	23	PGI DM0042GE00	Down guide	AF
106	VRD - RA2EE222J	2.2K ohm, 5%, 1/4W, Carbon (R8007) (Reel sensor PWB)	AA	24	PGUMM0028GEZZ	Worm-anti-vibration	AB
107	VRD - RA2EE221J	220 ohm, 5%, 1/4W, Carbon (R8001,8003) (Reel sensor PWB)	AA	26	QPLGN0980GEZZ	Socket, (9 pin)	AC
108	LX - NZ3019GEZZ	Adjusting nut	AB	27	QPWBF2298GEZZ	Relay PWB	AC
109	MLEVC0020GEZZ	Reverse guide lever	AG	28	QPWBF1553GEZZ	End sensor PWB	AB
110	MSPRC0088GEFJ	Reverse guide spring	AA	29	QSW- F0032GEZZ	Cassette switch	AD
112	MLEVP0101GEZZ	Universal brake lever	AB	30	QSW- F0022GEZZ	Mode switch	AE
114	MSPRT0240GEFJ	Universal brake spring	AA	31	QSW- F0023GEZZ	Cassette erase protection switch	AD
115	PSPAB0022GEFW	Supply impedance roller spacer	AB	33	RH- PX0053GEZZ	Photo-transistor	AF
116	VRD - RA2EE122J	1.2K ohm, 5%, 1/4W, Carbon (R8008)	AA	34	RM 0TM1040GEZZ	Cassette motor	AN
117	VRD - RA2EE152J	1.5K ohm, 5%, 1/4W, Carbon (R8009)	AA	35	MSPRD0068GEFJ	Cassette cover spring	AA
				36	VRD - RA2EE153J	Resistor (15K ohm)	AA
				37	VS2SA937 - Q/-1	Transistor	AC
				38	VRD - RA2BE392J	Resistor (3.9K ohm)	AA
				39	VRD - RA2EE223J	Resistor (22K ohm)	AA
				40	VRD - RA2BE222J	Resistor (2.2K ohm)	AA
				41	VCTYP A1EX473M	Capacitor (0.047μF)	AA
				42	LX - WZ1020GE00	Washer	AA
				43	LX - WZ1025GE00	Washer	AA

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
51	ML E V F 0 2 6 4 G E F W	Cassette lever	AE	1-8	H D E C E 0 1 4 5 G E S A	Decoration plate	AQ
52	L X - W Z 1 0 2 4 G E 0 0	Washer	AA	1-9	J B T N - 2 1 6 0 G E S A	Button, Play, Rec	AE
53	M S P R T 0 2 5 1 G E F J	Cassette lever spring	AA	1-10	J B T N - 2 1 6 1 G E S A	Button, FF, Rew, Still	AE
54	M L E V P 0 1 0 5 G E Z Z	Cassette chip	AA	1-11	J B T N - 2 1 7 1 G E S A	Button, Timer	AD
				1-12	J B T N - 2 1 9 4 G E S A	Button, Select	AD
				1-13	J B T N - 2 1 6 4 G E S A	Button, tuning	AD
SCREWS, NUTS, WASHERS AND WIRE CLAMP				1-14	G D 5 R F 1 4 0 9 G E S A	Door	AW
301	L X - B Z 3 0 1 8 G E Z Z	Audio/Control head screw	AA	1-15	Q E A R P 0 2 3 7 G E F W	Earth plate	AB
302	L X - B Z 3 0 3 9 G E F N	Screw W3P+9S-Ni	AA	1-16	Q E A R P 0 2 3 8 G E F W	Earth plate	AC
303	X B P S D 2 6 P 1 4 J 0 0	Screw 2.6P-14S	AA	1-17	Q E A R P 0 2 4 0 G E F W	Earth plate	AA
304	L X - B Z 3 0 4 9 G E F D	Screw WSW3P+10S	AA	1-18	Q E A R P 0 2 3 6 G E F W	Earth plate	AC
305	L X - H Z 3 0 0 2 G E F D	Screw 3×8	AA	1-19	Q E A R P 0 2 4 1 G E Z Z	Earth plate	AA
306	L X - H Z 3 0 0 8 G E F D	Screw S3P+8S-W	AA	1-20	H i N D P 1 4 0 5 G E S A	Indication plate	AF
307	L X - H Z 3 0 2 6 G E F D	Screw 2×8	AA	1-21	H i N D P 1 3 9 8 G E S A	Indication plate	AG
308	L X - H Z 3 0 2 7 G E F D	Screw 3×8	AA	1-22	H B D G B 3 0 0 7 G E S B	Badge SHARP	AC
309	L X - N Z 3 0 1 3 G E F W	Adjusting nut	AA	1-23	J B T N - 2 1 6 5 G E S A	Button, channel	AD
310	L X - N Z 3 0 3 1 G E F W	Adjusting nut	AA	1-24	J B T N - 2 1 3 5 G E S A	Button, power	AC
311	L X - N Z 3 0 1 6 G E F D	Adjusting nut	AB	1-25	G C 5 V A 1 4 4 2 G E S A	Cover	AC
312	L X - W Z 1 0 0 1 G E 0 0	Washer 3.2W-8-0.5	AA	1-26	J B T N - 2 1 3 6 G E S A	Button, Eject	AC
313	L X - W Z 1 0 0 3 G E 0 0	Washer 2.1W-5-0.5	AA	1-29	L A N G A 0 0 4 6 G E Z Z	Magnet angle	AC
315	L X - W Z 1 0 0 6 G E 0 0	Washer 2.6W-5.4-0.5	AA	1-30	L H L D Z 3 0 3 5 G E Z Z	Holder	AD
317	L X - W Z 1 0 1 5 G E 0 0	Washer 3.6W-7.2-0.5	AA	1-31	M S P R C 0 1 3 4 G E F J	Spring	AA
318	L X - X Z 3 0 0 1 G E F P	Fixing screw M2×3	AC	1-32	T L A B H 0 3 6 5 G E Z Z	Timer operation instruction label	AC
321	X B P S D 2 0 P 0 3 0 0 0	Screw 2P+3S	AA	1-33	H D E C Q 0 4 8 5 G E S A	Decoration plate	AG
322	X B P S D 2 6 P 0 4 J 0 0	Screw SW2.6P+4S	AA	1-34	P S P A H 0 0 4 0 G E Z Z	Spacer	AA
323	X B P S D 3 0 P 0 4 J 0 0	Screw SW3P+4S	AA	MECHANICAL PARTS			
325	X B P S D 3 0 P 0 5 J 0 0	Screw SW3P+5S	AA	1	G C A B A 3 0 3 1 G E S 1	Upper cabinet	AR
327	X B P S D 3 0 P 0 8 J 0 0	Screw SW3P+8S	AA	2	G C A B B 1 0 6 4 G E Z Z	Bottom Cabinet	AU
328	X B P S D 3 0 P 0 8 0 0 0	Screw 3P+8S	AA	3	G C 5 V A 1 4 3 8 G E Z Z	Antenna terminal plate	AF
331	X H P S D 3 0 P 0 6 W S 0	Screw C3P+6S	AA	4	G B D Y U 3 0 4 7 G E Z Z	Bottom plate	AH
332	X H P S D 3 0 P 0 8 W S 0	Screw C3P+8S	AA	5	L H L D Z 1 5 4 8 G E Z Z	Display holder	AC
334	X H P S 3 3 0 P 0 6 W S 0	Screw C3P+6S (Red)	AA	7	L A N G K 0 1 0 6 G E F W	Angle	AB
337	X J P S D 3 0 P 0 6 W S 0	Screw C3P+6S	AA	8	X H P S D 3 0 P 0 6 W S 0	Screw	AB
338	L X - N Z 3 0 3 3 G E F D	Nut	AA	10	L A N G F 7 0 4 6 G E F W	Angle for Main PWB	AD
339	X R E S J 3 0 - 0 6 0 0 0	E-ring E-3	AA	11	L X - L Z 1 0 0 1 G E Z Z	Rivet	AA
342	X W H J Z 3 1 - 0 5 0 5 4	Washer 3.1W-5.4-0.5	AA	12	X E B S D 3 0 P 1 2 0 0 0	Screw	AA
342	X W H J Z 3 1 - 0 1 0 5 4	Washer 3.1W-5.4-0.13	AA	14	X J B S F 3 0 P 1 4 0 0 0	Screw	AA
342	L X - W Z 1 0 1 7 G E 0 0	Washer 3.1W-5.4-0.2	AA	15	L X - H Z 3 0 3 0 G E F F	Screw	AA
342	L X - W Z 1 0 1 8 G E 0 0	Washer 3.1W-5.4-0.3	AA	16	L X - H Z 3 0 4 0 G E F F	Screw	AA
342	L X - W Z 1 0 1 9 G E 0 0	Washer 3.1W-5.4-0.4	AA	17	T L A B M 1 4 6 7 G E Z Z	Model label	AB
350	L X - B Z 3 0 6 5 G E F D	Screw	AA	18	P Z E T V 0 2 6 5 G E Z Z	Insulator	AG
352	L X - H Z 3 0 3 6 G E F D	Screw C2.6P+5.5S	AA	20	L A N G K 0 1 0 4 G E F W	Earth plate	AB
353	X R E S J 1 2 P 0 3 0 0 0	E-ring E1.2-T0.3	AA	21	L A N G K 0 1 0 5 G E F W	Plate	AC
354	X B P S D 3 0 P 0 6 J 0 0	Screw SW3P+6S	AA	23	X E B S D 4 0 P 1 6 0 0 0	Screw	AA
FRONT PANEL PARTS				24	L A N G F 7 0 4 5 G E F W	Angle	AD
1	C P N L C 1 5 0 2 G E 1 1	Front panel ass'y	BH	25	L H L D F 1 0 7 2 G E 0 0	Holder	AB
1-2	G C 5 V A 1 4 5 4 G E S A	Cover	AC	26	P S L D M 4 1 6 8 G E F W	Shield	AE
1-3	G M A D i 0 1 6 1 G E S A	Window	AC	27	P S L D M 4 1 6 9 G E F W	Shield	AE
1-6	H D E C E 0 1 3 1 G E S C	Decoration plate	AK	28	P S L D M 4 1 6 7 G E F W	Shield case	AP
1-7	H D E C E 0 1 4 1 G E S A	Decoration plate	AG	29	L H L D F 1 0 3 3 G E Z Z	Holder	AA
				30	L H L D W 1 0 2 1 G E 0 0	Holder	AB

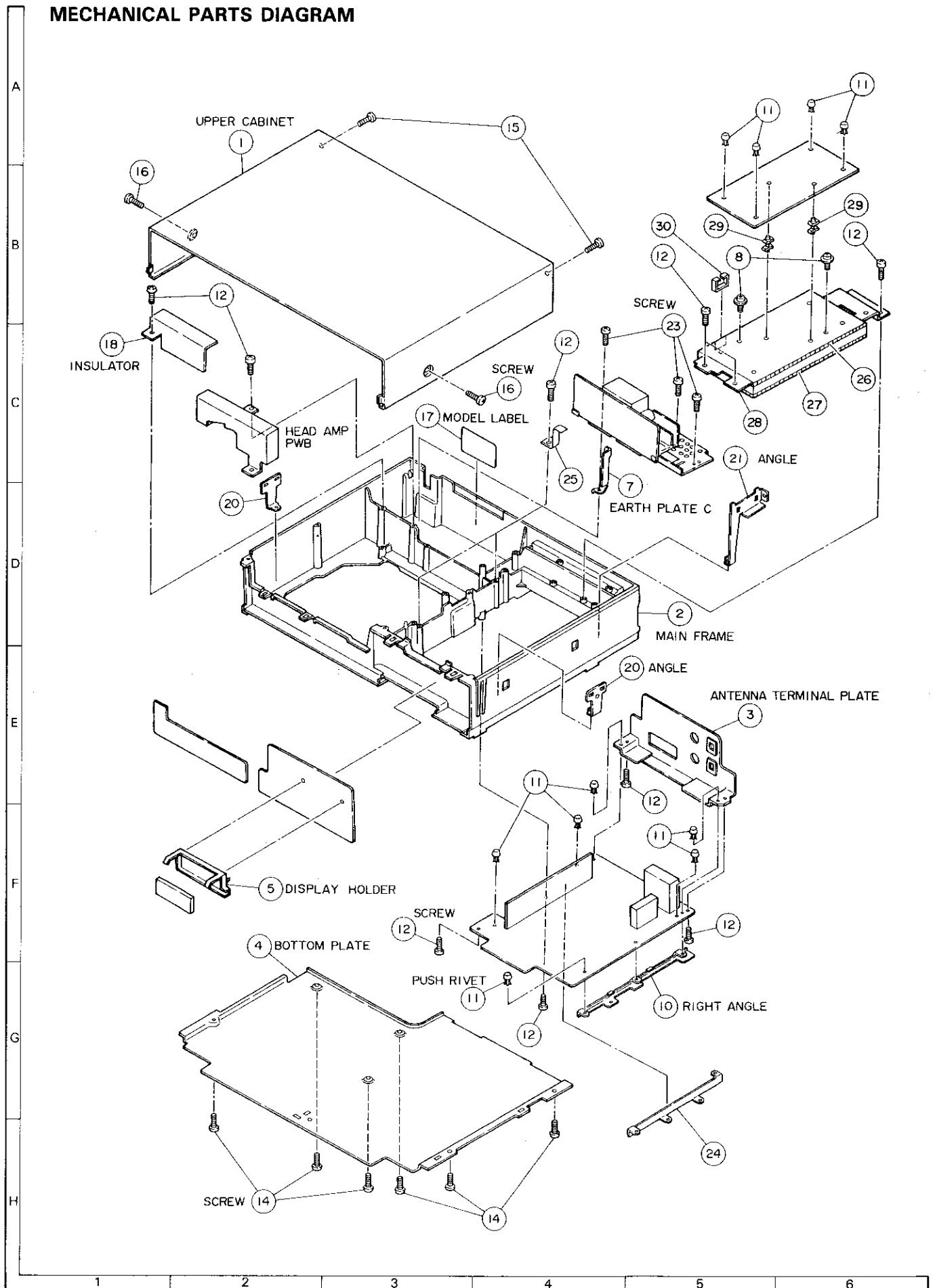
CASSETTE HOUSING CONTROL PARTS DIAGRAM



FRONT PARTS



MECHANICAL PARTS DIAGRAM



PACKING OF THE SET

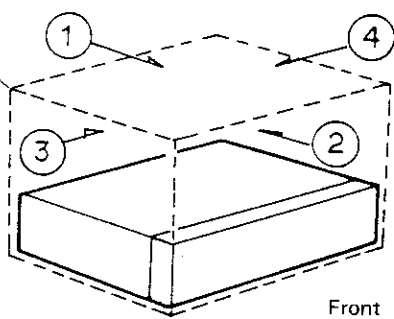
• Setting positions of the Knobs

Picture tone knob	Center click	Auto Colour mode switch	AUTO
Tracking play knob	Center click	Band selector switch	Normal
Beeper switch	ON	RF converter switch	0 CH

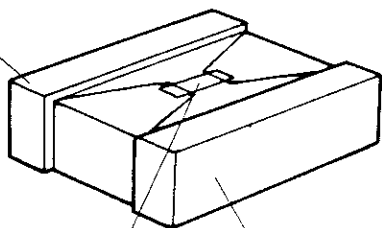
* Accessories

TGAN-1024GEZZ Guarantee card
 TiNA-1026GEZZ Operation manual
 QCNW-2304GEZZ Antenna cord
 TLSTS0001ZZRO SS-List

SPAKP0005GEZZ
Polystyrene Sack

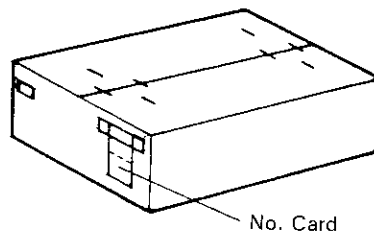
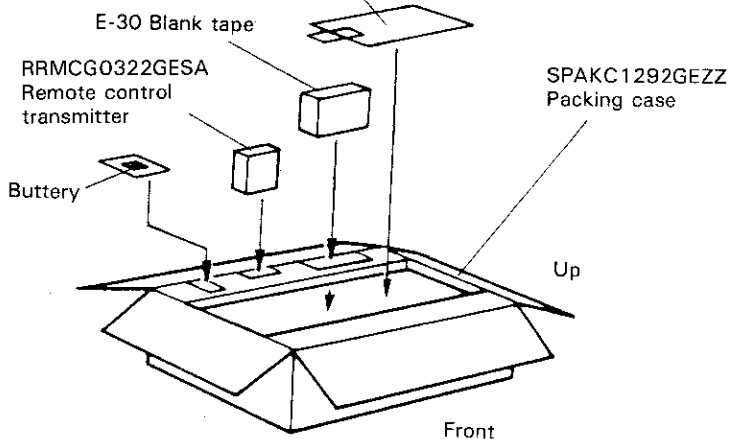


SPAKX0373GEZZ
Buffer material (Rear)



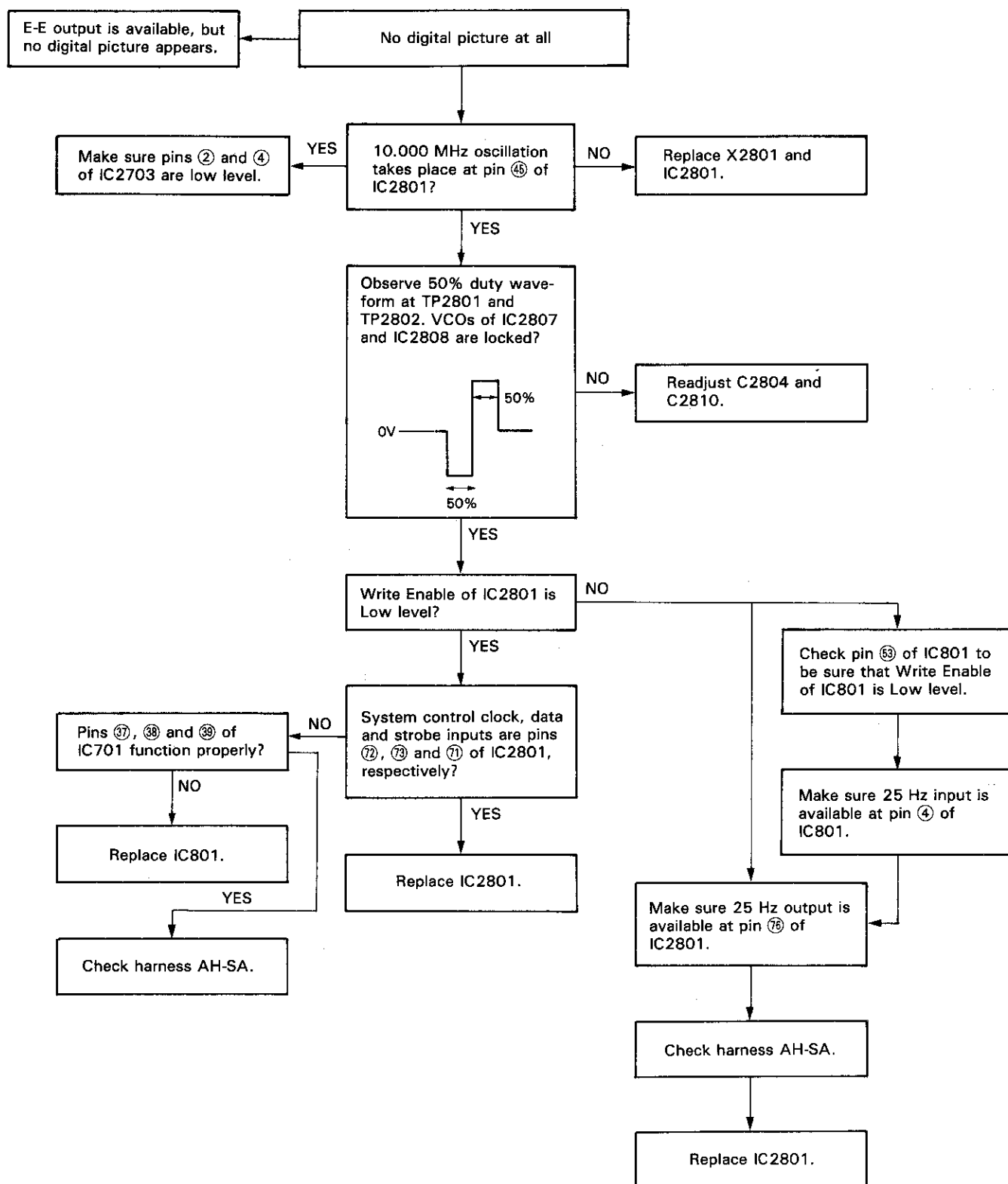
Fix with craft tape

SPAKX0417GEZ
Buffer material (Front)



SHARP

DIGITAL MEMORY (1) TROUBLESHOOTING



DIGITAL(A) F2648GE

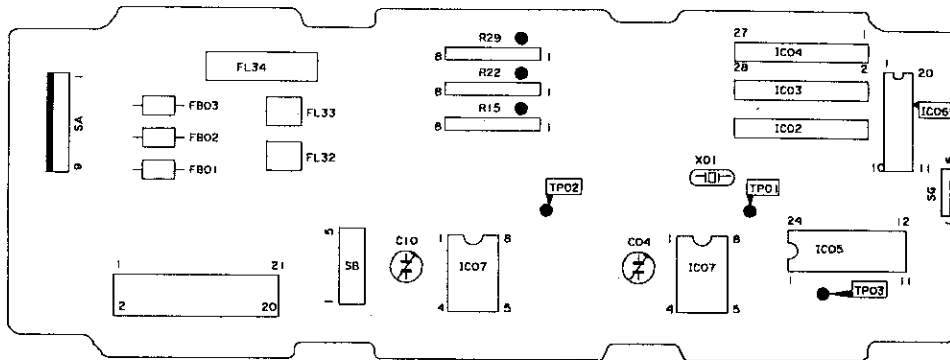


Figure 2-16. Digital (A) Circuit

DIGITAL(B) F2649GE

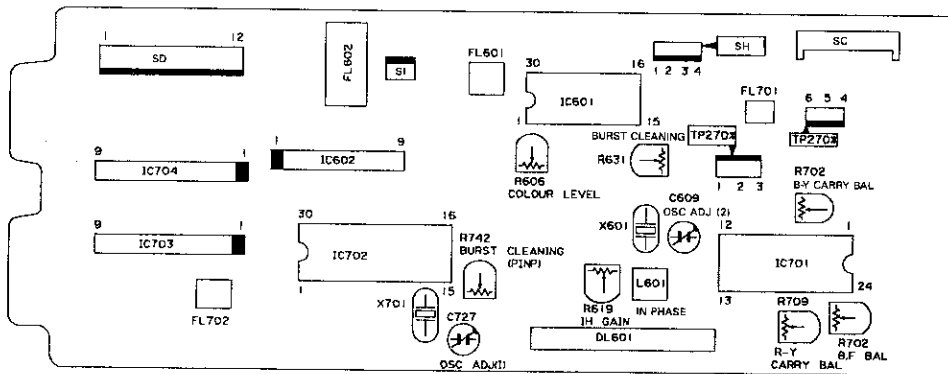
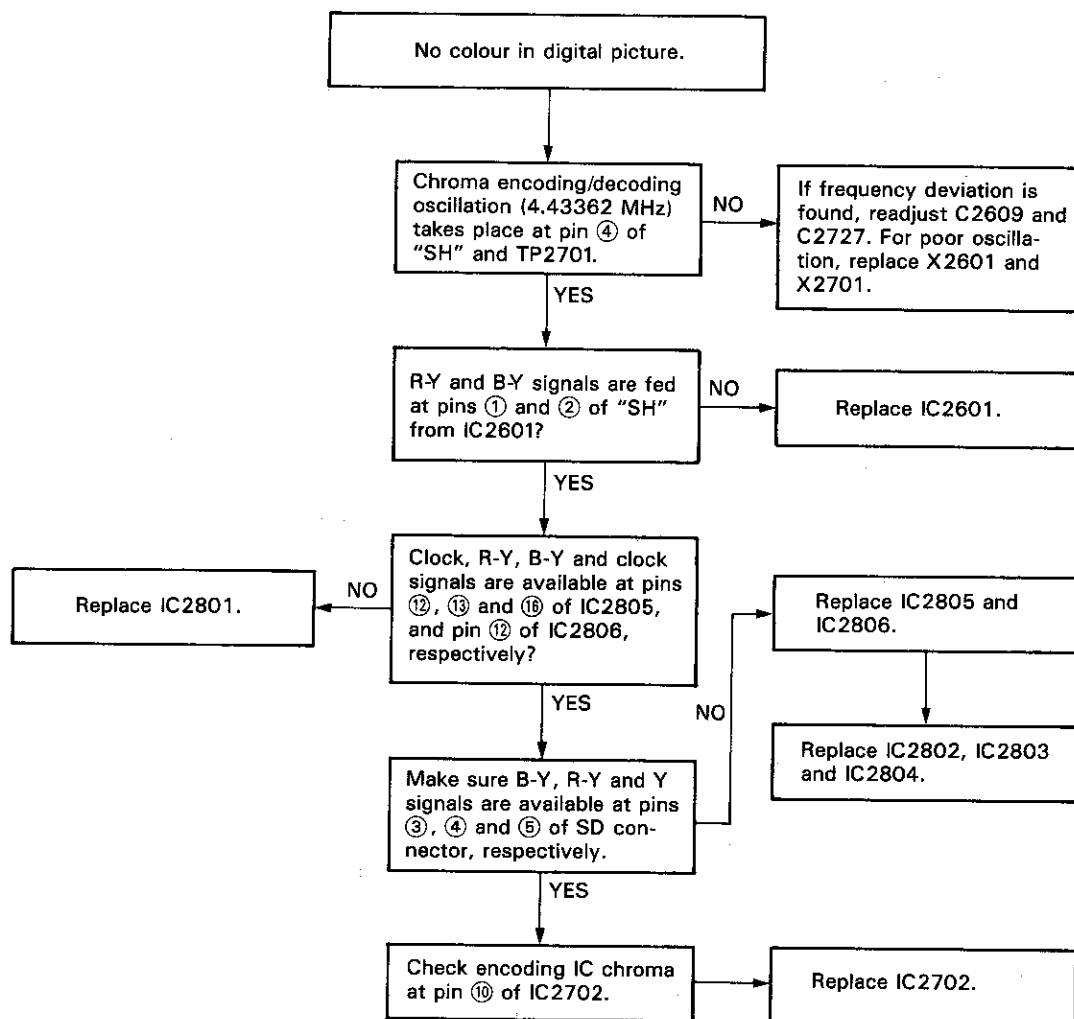


Figure 2-17. Digital (B) Circuit

DIGITAL MEMORY (2) TROUBLESHOOTING




TROUBLESHOOTING GUIDE

• TROUBLES OF CONTROL SYSTEM (SERVO, SYSTEM CONTROLLER CIRCUIT)

No.	Problems	Probable causes and countermeasures
1.	No power is supplied.	<ul style="list-style-type: none"> The fuse is blown out; check if there occurs a short-circuit in the internal circuit. Check if there are produced AT5V, UR (unregulated) 15V and AT9V in the power circuit; if not, this means that the power circuit is defective. Check if the system controller (IC801) is normally functioning; check if there are produced reset signals at pin ④⑤ of IC801 and clock signal at pins ④⑥ and ④⑦ of IC801. Check if the power control signal (Low level) goes out of pin ①⑨ of IC801.
2.	No operation is available.	<ul style="list-style-type: none"> Check if the start sensor signal (cassette housing side) and end sensor signal are applied to pins ④① and ④② of IC801 respectively. Check if the unit is in timer mode. Check if the unit is in sensor stop mode. The cam switch is poorly adjusted for its positioning.
3.	After tape loading, the unit is stopped with the tape kept wound over the drum, or the cassette can't be ejected.	<ul style="list-style-type: none"> The cam switch is poorly adjusted for its positioning. IC802 is defective.
4.	The unit will stop immediately after it is set in playback or record mode.	<ul style="list-style-type: none"> Check if the head switching pulse is applied to pin ③ (for the drum sensor) of IC801. Check if the drum motor is rotating. Check if the drum pulse generator's signal is applied to pin ⑦ of the servo circuit IC701.
5.	The unit will stop a few seconds after it has been set in playback or record mode.	<ul style="list-style-type: none"> Check if the reel pulse is applied to pin ④③ (for the reel sensor) of IC801. Check if the capstan motor is rotating. Check if the reel idler is stained or defective.
6.	The tape is not running (the tape is not taken up.)	<ul style="list-style-type: none"> The reel idler is defective. The reel brake is defective.
7.	<ul style="list-style-type: none"> The unit stops sometimes during playback or recording. The tape can't be taken up when tape unloading. The tape is scratched when it is wound. Video search is impossible. 	<ul style="list-style-type: none"> Check if there are produced capstan motor control signals at the system controller (servo strobe signal at ③⑥ of IC801, servo clock signal ③⑦ of IC801, servo date signal at ③⑧ of IC801, capstan motor pull up signal at pin ②⑧ of IC801, capstan motor unloading signal at pin ②⑨ of IC801, cassette motor control signal at pin ⑥② of IC801, loading motor control signal at pin ⑥③ of IC801, cassette and loading motors reverse control signal at pin ⑧ of IC801). The video search circuit is defective. IC701, IC702 and IC803 are defective.
8.	Fine noises appear at the reproduced picture.	<ul style="list-style-type: none"> The playback phase control is misadjusted (R720). The tracking preset control is misadjusted (R707).

No.	Problems	Probable causes and countermeasures
9.	Noises appear intermittently at the reproduced picture.	<ul style="list-style-type: none"> Check for the capstan servo circuit (capstan frequency generator's signal at pin ⑭ of IC702 and playback control signal at pin ① of IC702).
10.	The picture collapses in the horizontal direction.	<ul style="list-style-type: none"> The drum servo circuit is defective. Check if there are drum frequency generator's signal applied to pin ⑥ of IC701 and drum pulse generator's signal to pin ⑦ of IC701. Check if there is reference signal (4.43 MHz) at pin ① of IC701.

• TROUBLES OF SOUND AND REPRODUCED PICTURE (Y/C AND AUDIO CIRCUIT)

No.	Problems		Probable causes and countermeasures
1.	No picture appears.	At E-E mode	<ul style="list-style-type: none"> Check if the video signal (E-E signal) is applied to pin ② of IC201, if the video signal goes out of pin ⑳, and if proper voltage is applied to each pin of IC201.
		At playback of standard tape.	Make sure that there appears a normal picture at E-E mode. <ul style="list-style-type: none"> Check if the playback FM signal is applied to pin ⑩ of IC201. Check if the playback FM signal is applied to pins ⑲ and ⑳ of IC301.
		At playback of the tape recorded by oneself.	Before this checking, make sure that normal playback is possible with standard tape. <ul style="list-style-type: none"> Check if there is FM signal at pin ① of IC201. Check if there is video signal at pin ㉑ of IC201. Check if there is video signal at pin ㉒ of IC201.
2.	No colour appears.		<ul style="list-style-type: none"> Check if there is chroma signal at pin ㉓ of IC501. APC is misadjusted (R507). It is not allowed to re-adjust them, this means that IC501 is defective. Check if IC501 is normally functioning.
3.	The picture collapses when the tape recorded by oneself is played back. <div style="text-align: center;">  </div>		<ul style="list-style-type: none"> Check if there is a normal voltage at each pin of the head amplifier.
4.	Noises appear on the whole of picture when the tape recorded by oneself is played back.		<ul style="list-style-type: none"> Check if there is a normal voltage at each pin of the head amplifier. Clean the video head or replace it a new one.
5.	Noise is noticeable at E-E mode or when the tape recorded by oneself is played back.		<ul style="list-style-type: none"> The tuner and/or RF converter are defective.

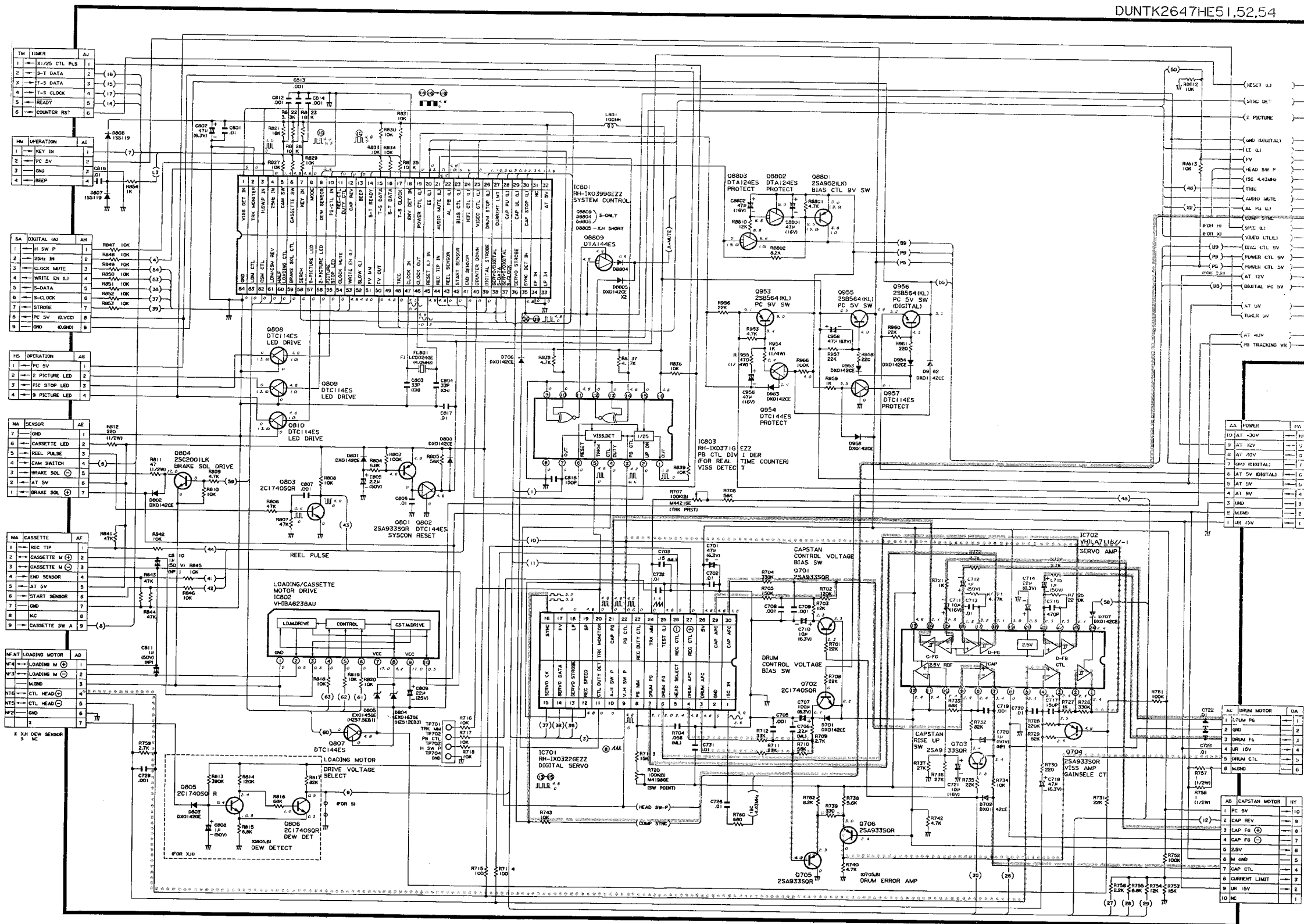
No.	Problems	Probable causes and countermeasures
6.	Noises appear on the picture when the tape is played back with standard tape.	<ul style="list-style-type: none"> • Clean the video head or replace it a new one.
7.	There appears no E-E sound.	<ul style="list-style-type: none"> • ALC at IC601 operates improperly. • Check if there is audio signal at pin ⑩ of IC601. • The audio muting circuit is defective.
8.	There appears on sound at playback mode.	<ul style="list-style-type: none"> • The audio head is defective. • Check if playback audio signal is applied to pin ⑦ of IC601 and goes out of pin ⑩.
9.	Sound is distorted.	<ul style="list-style-type: none"> • The audio head is magnetized or defective. • Bias current is insufficient.
10.	There reasonance in the recording or playback is incorrect.	<ul style="list-style-type: none"> • The audio head is magnetized or defective. • Bias oscillator circuit is defective.
11.	Recording is impossible.	<ul style="list-style-type: none"> • Bias oscillator circuit is not normally functioning.
12.	Noise and hum appear frequently during playback or recording.	<ul style="list-style-type: none"> • The audio head is defective.

PWB-A, SYSTEM CONTROL, SERVO CIRCUIT SCHEMATIC DIAGRAM (MAIN 1)

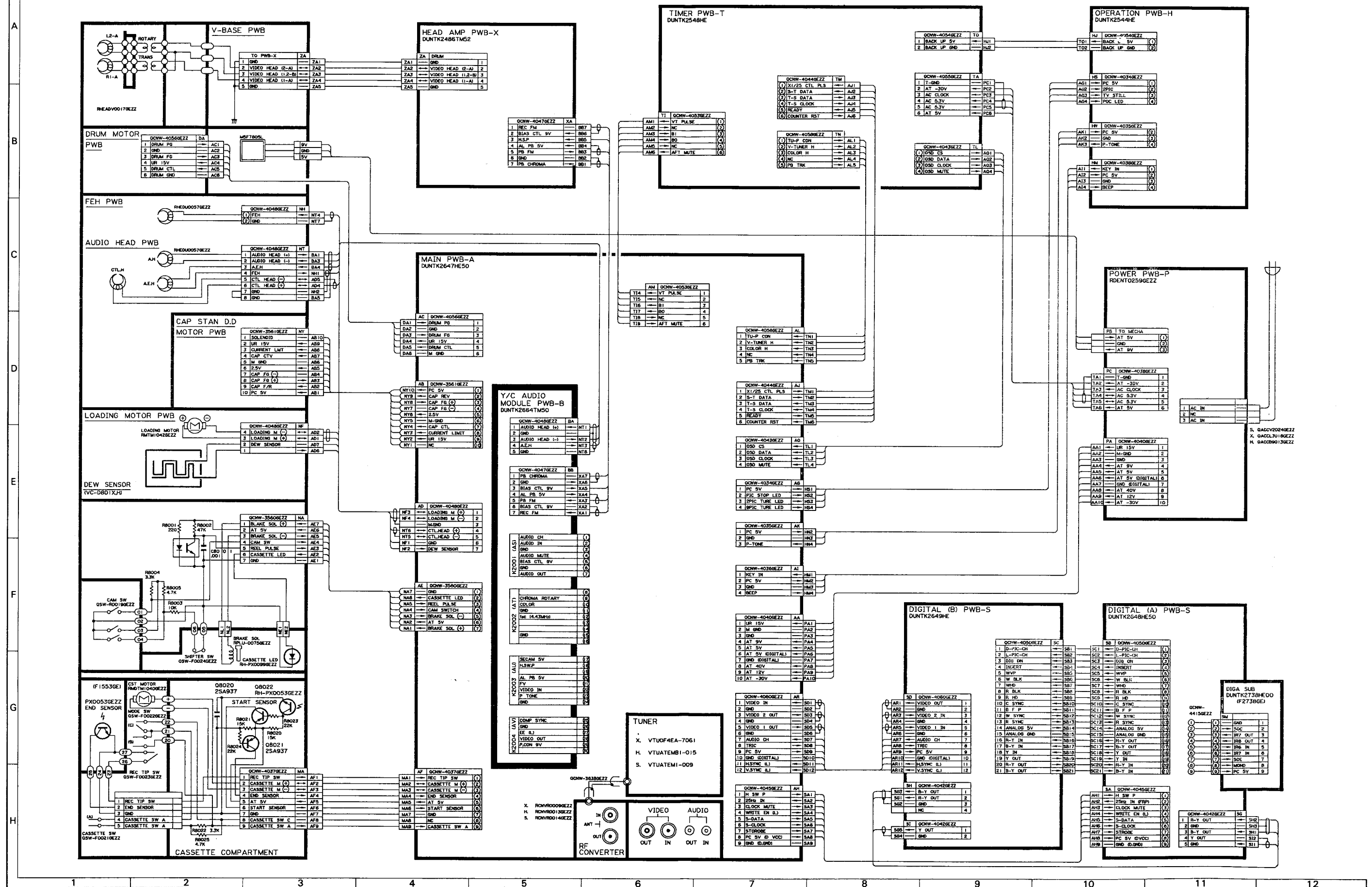
Capstan frequency reference signal
Capstan control signal
Capstan phase reference signal

Drum phase reference signal (Playback mode)
Drum frequency reference signal
Drum control signal
Record reference signal

DUNT2647HE51,52,54



OVERALL SCHEMATIC DIAGRAM



PWB-B, Y/C AUDIO CIRCUIT SCHEMATIC DIAGRAM

Record luminance signal

Record chrominance signal

Video E-E signal

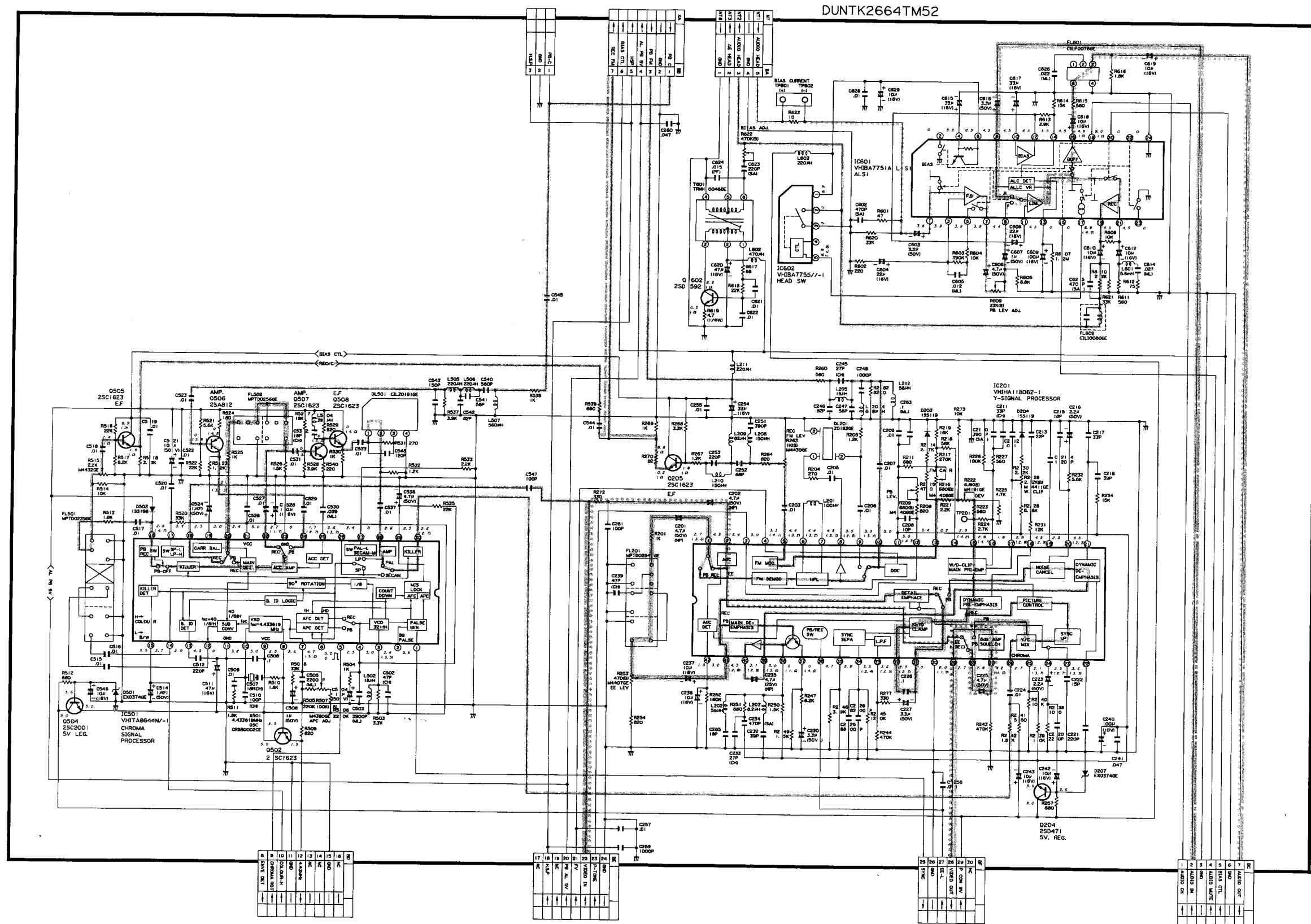
Audio E-E signal

Playback luminance signal

Playback chrominance signal

Audio playback signal

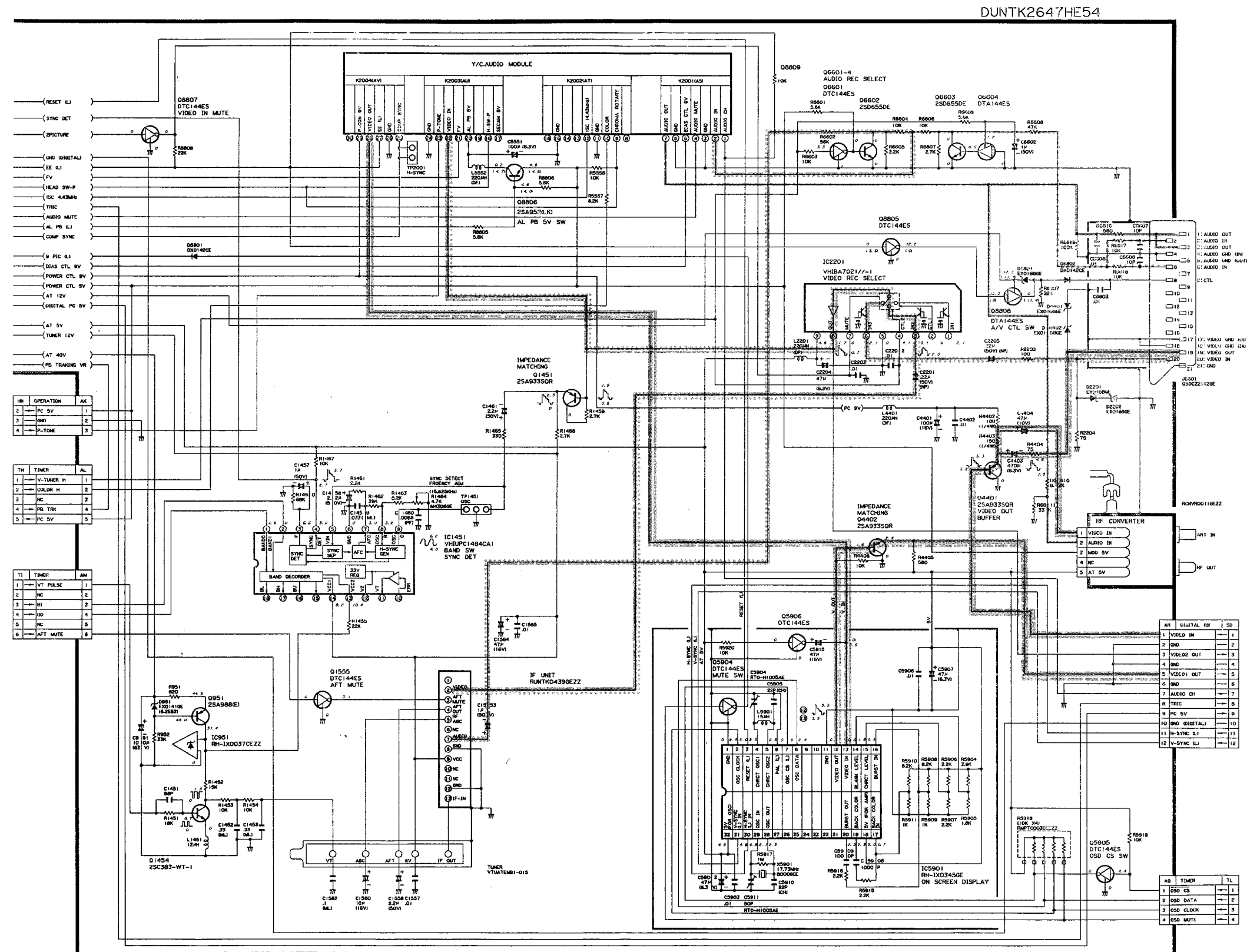
Audio record signal



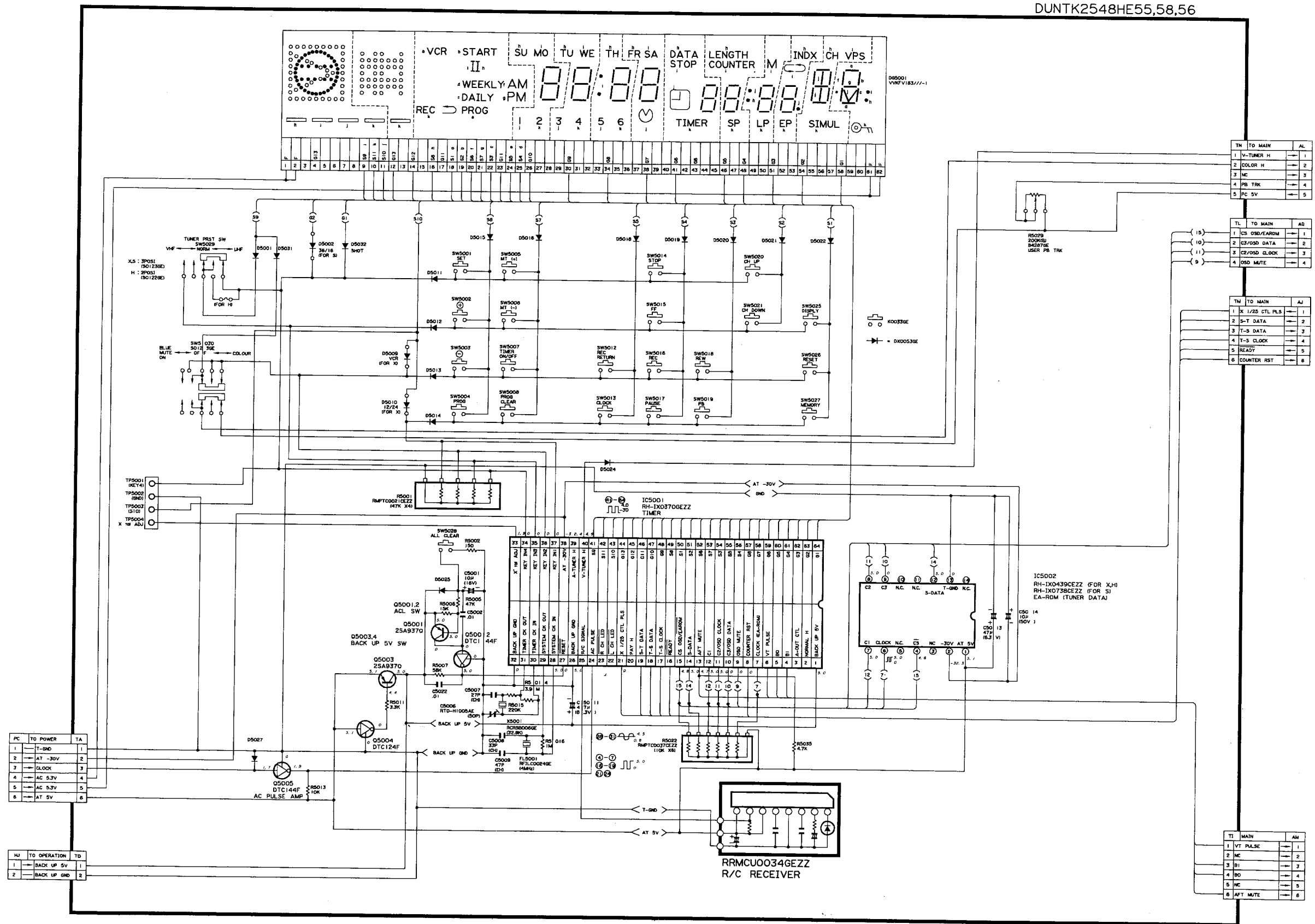
PWB-A, SYSTEM CONTROL, SERVO CIRCUIT SCHEMATIC DIAGRAM (MAIN 2)

PLAYBACK	Playback chrominance signal
PLAYBACK	Playback luminance signal
RECORD	Record chrominance signal
RECORD	Record luminance signal

Video E-E signal
Audio E-E signal
Audio record signal
Audio playback signal



DUNK2548HE55,58,56

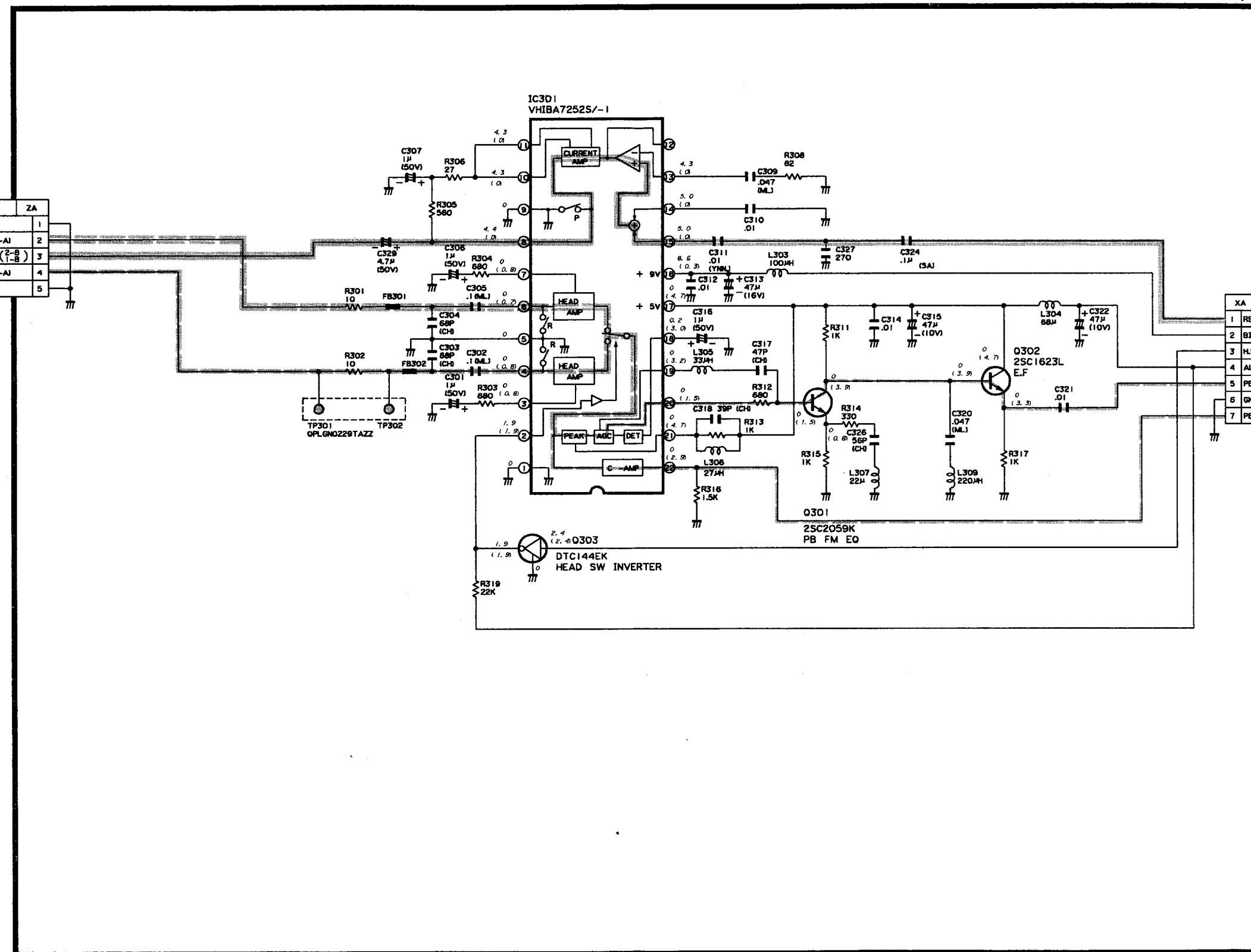


PWB-X, HEAD AMPLIFIER CIRCUIT SCHEMATIC DIAGRAM

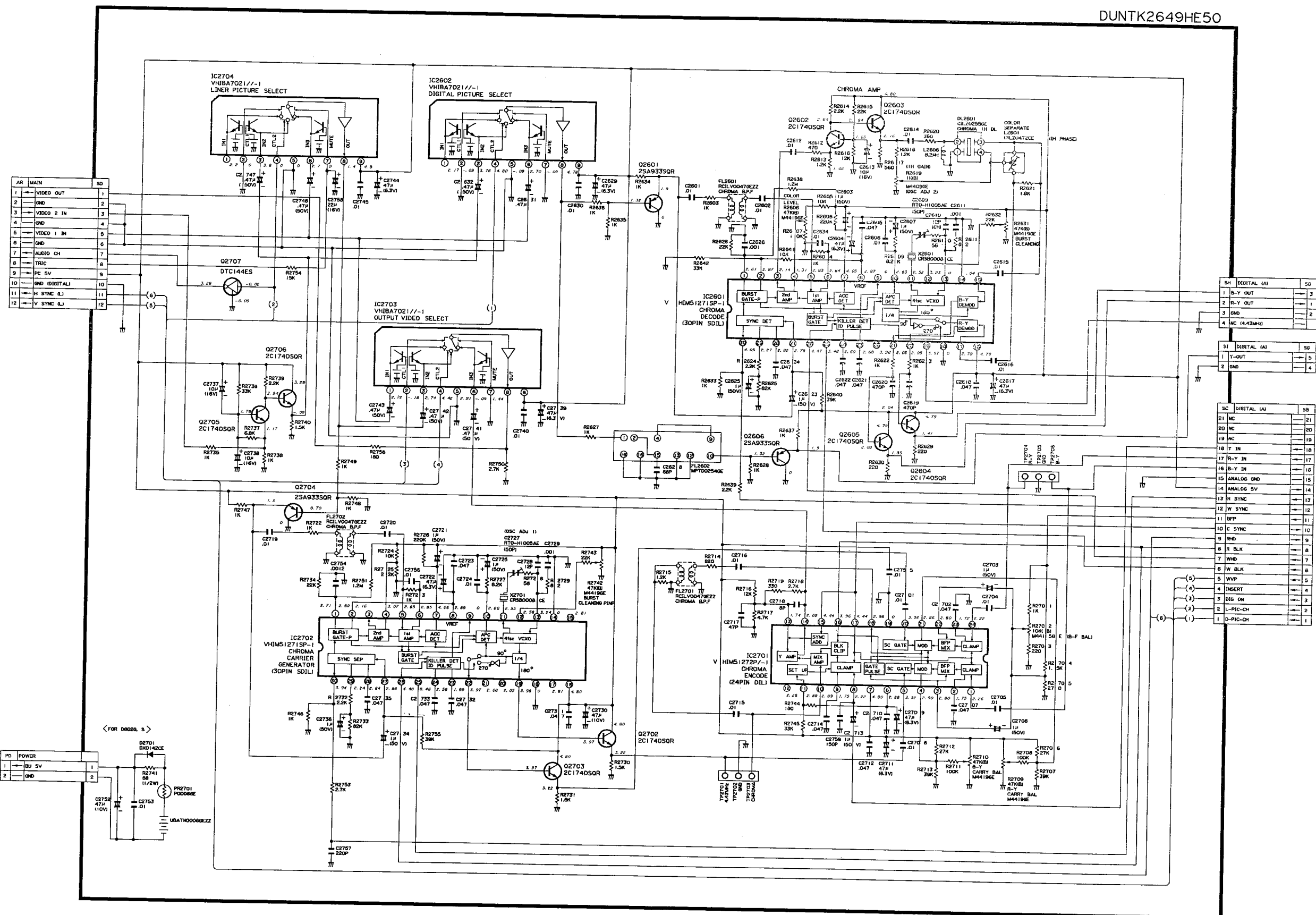
DUNTK2486TM50,52

VIDEO HEAD		ZA
ZA1	GND	1
ZA2	V-HEAD PB (2-A)	2
ZA3	V-HEAD REC (1-B)	3
ZA4	V-HEAD PB (1-A)	4
ZA5	GND	5

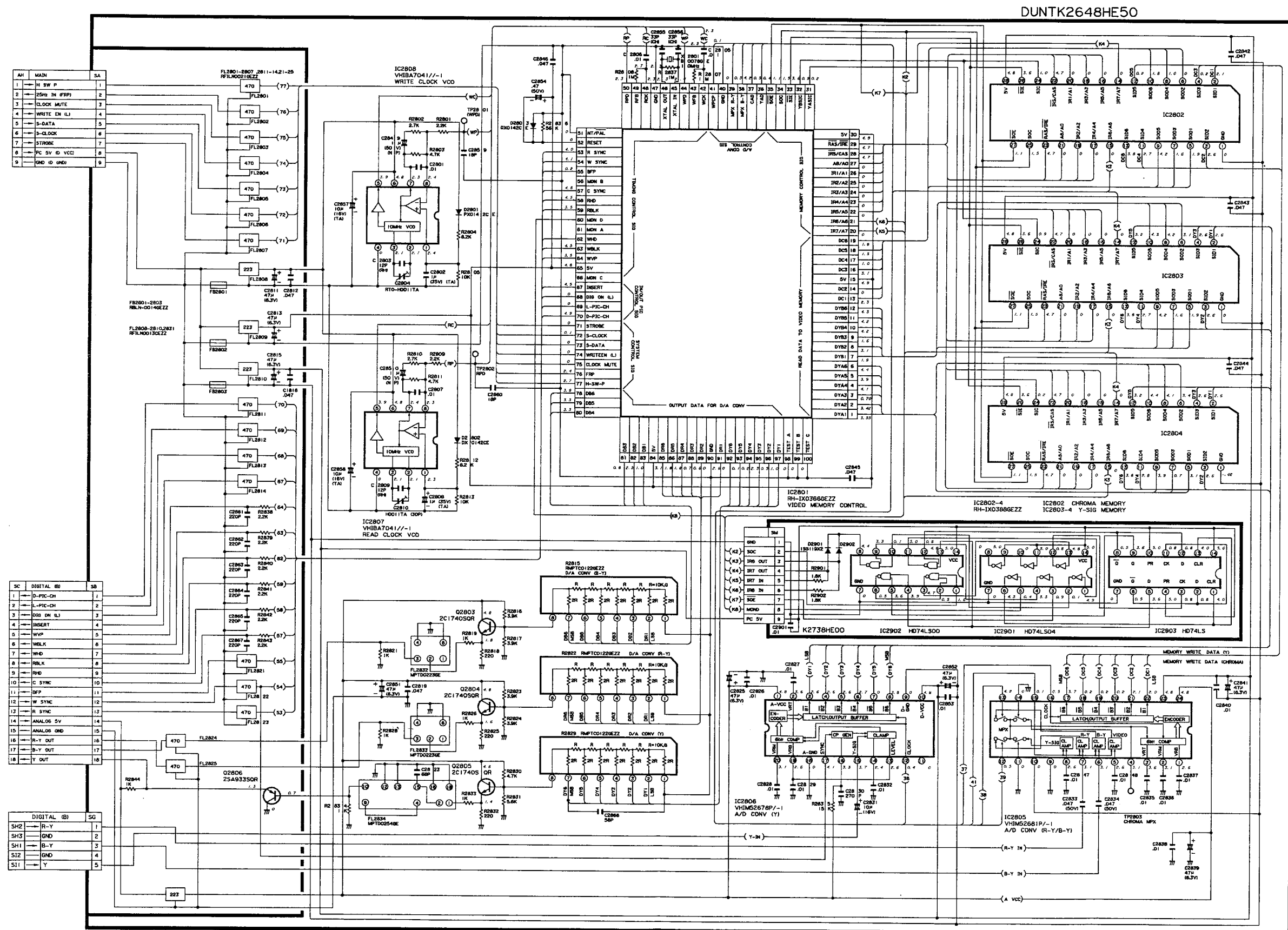
XA	Y/C.AUDIO	BB
1	REC FM	7
2	BIAS CTL 9V	6
3	H.S.P	5
4	AL PB 5V	4
5	PB FM	3
6	GND	2
7	PB CHROMA	1



DUNTK2649HE50



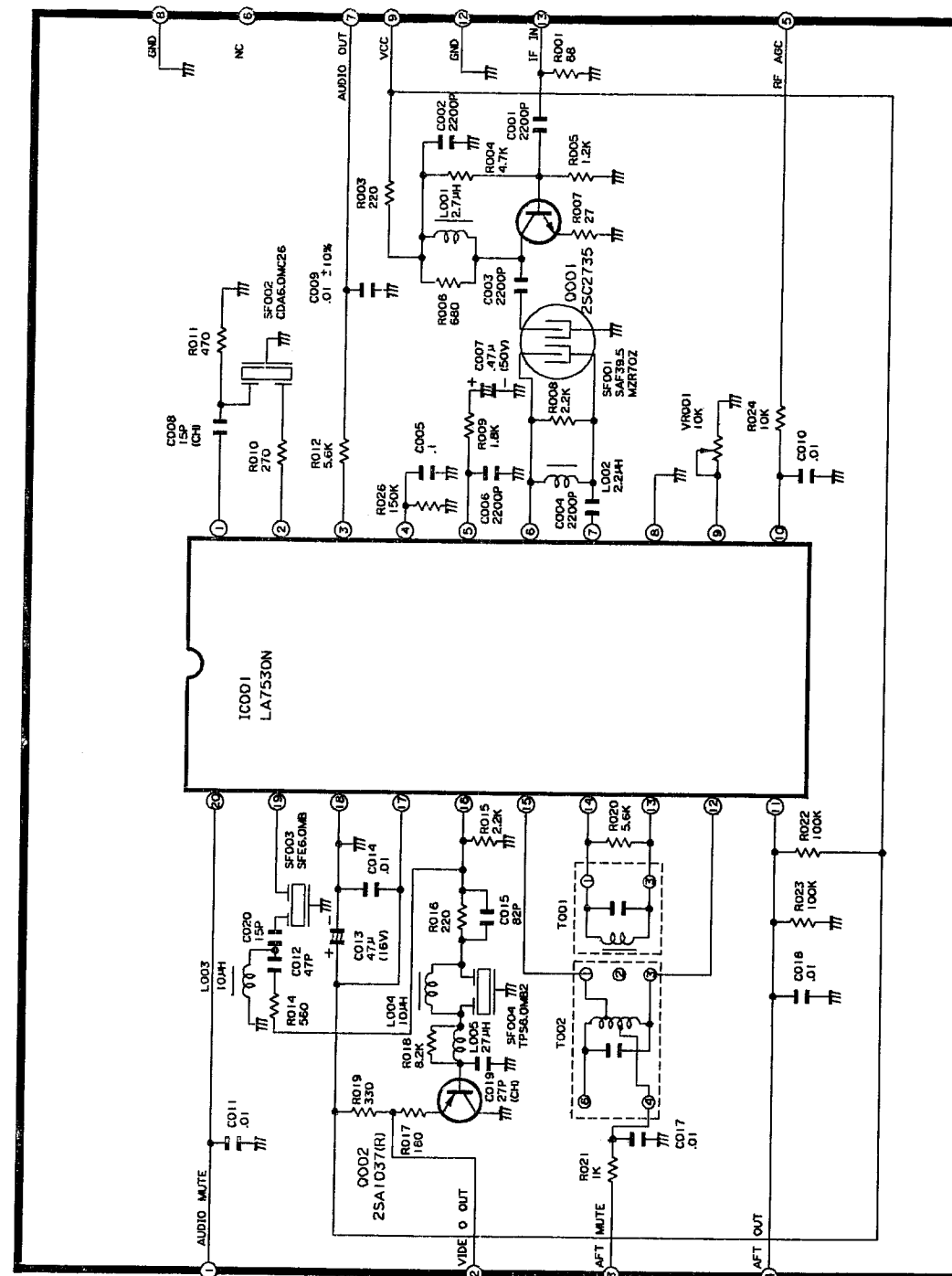
A
B
C
D
E
F
G
H



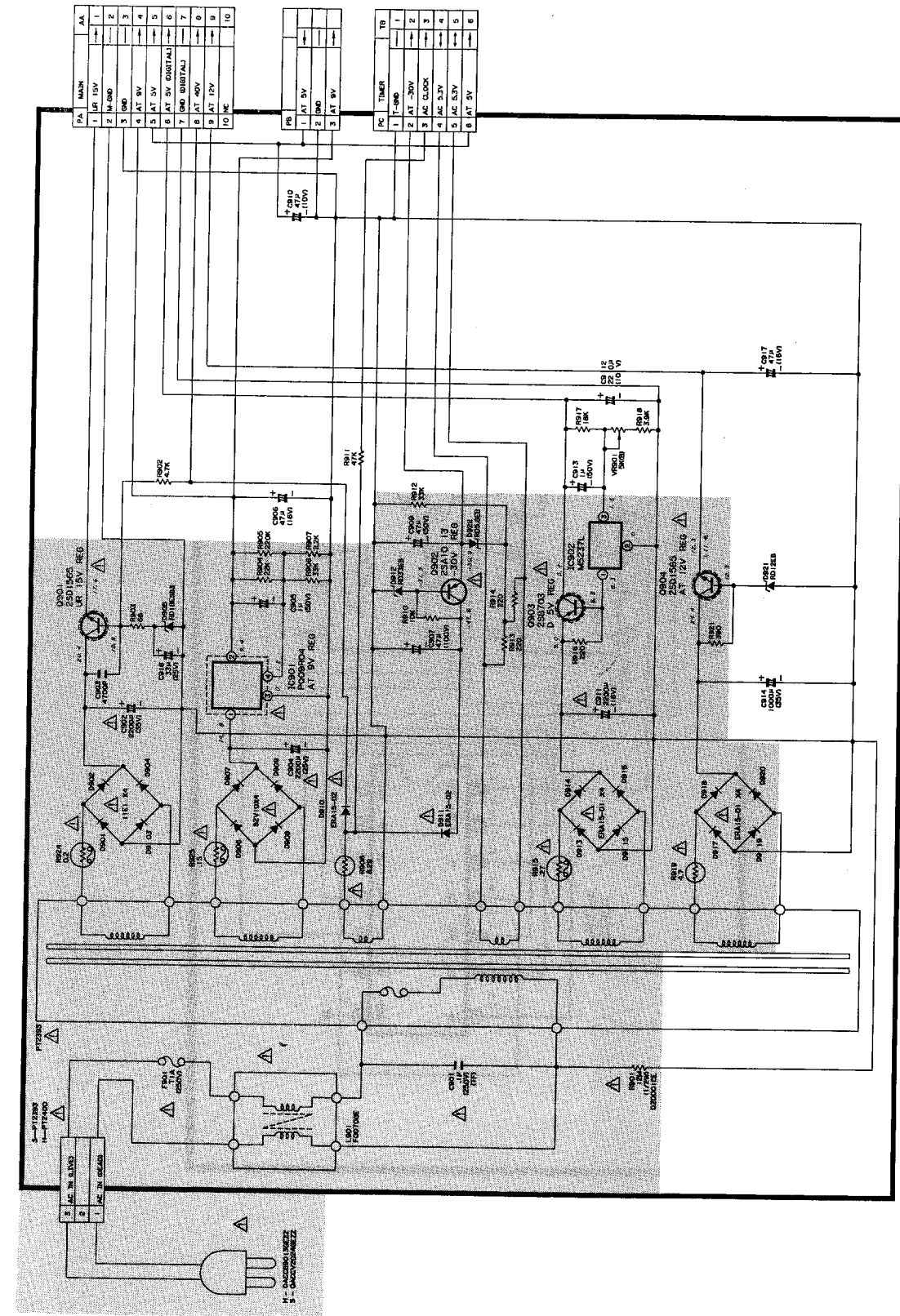
INTERMEDIATE FREQUENCY TUNER CIRCUIT WIRING SIDE PWB

PWB-P, POWER CIRCUIT SCHEMATIC DIAGRAM

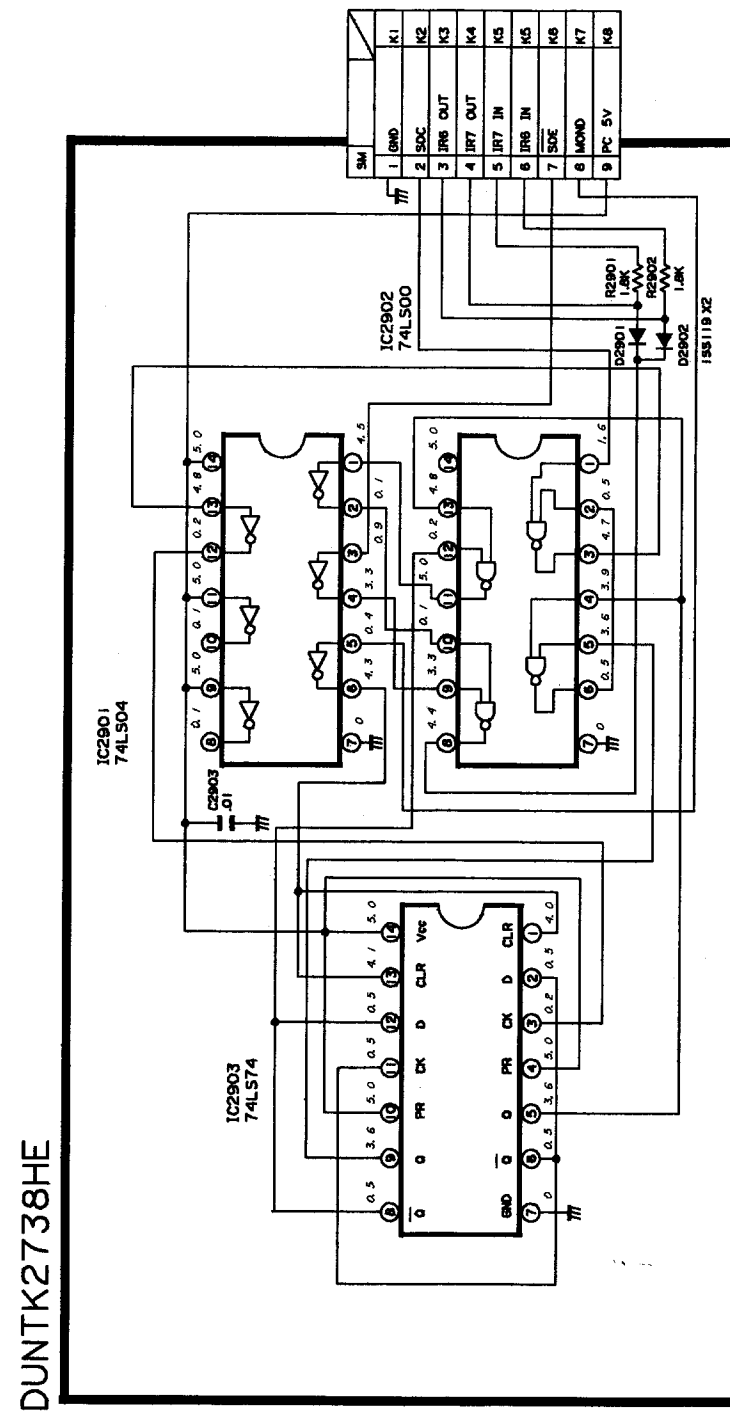
RUNTK0439GEZZ



RDENTO261GEZZ

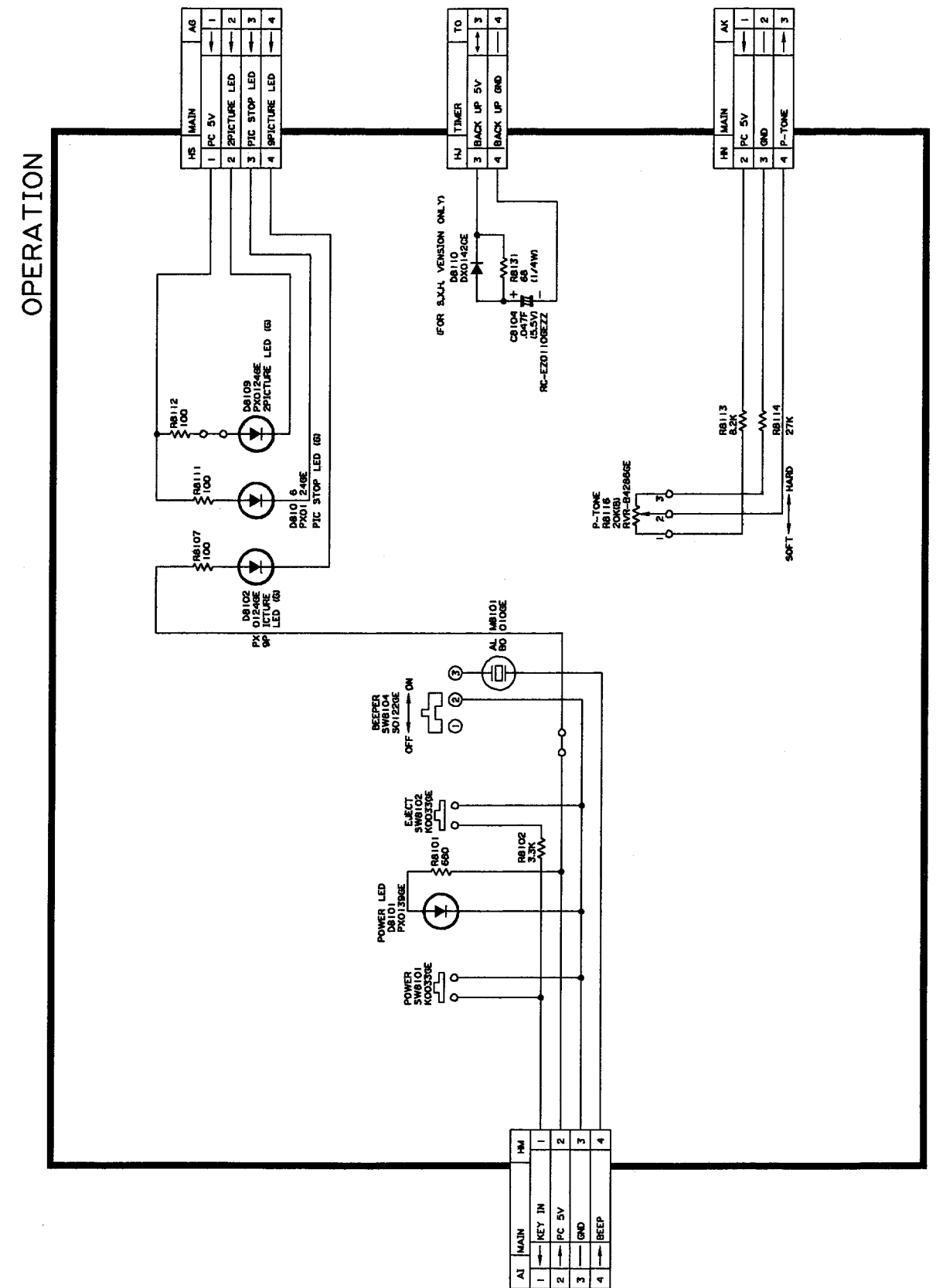


DIGITAL (A) SUB CIRCUIT SCHEMATIC DIAGRAM



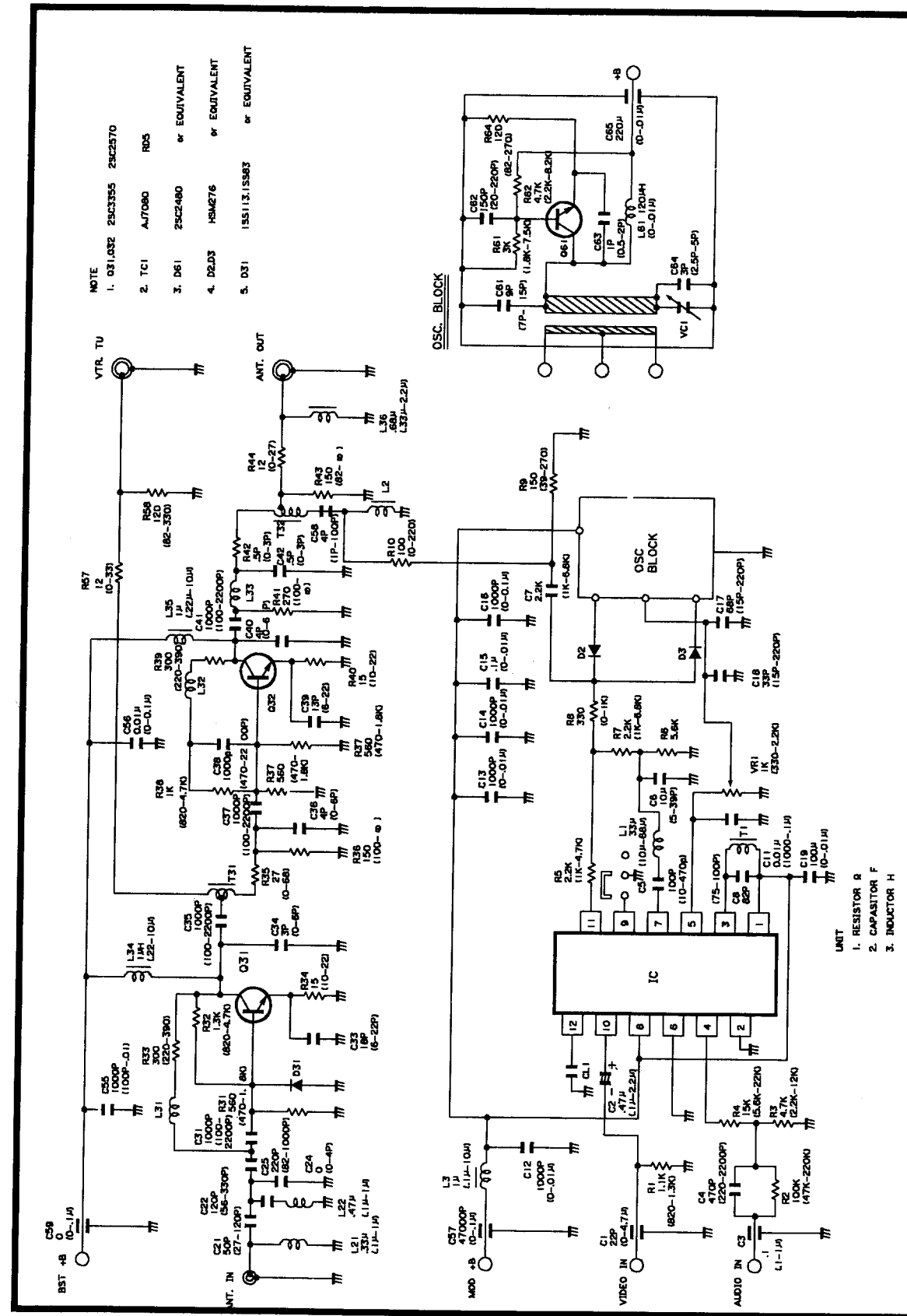
DUNTK2738HE

PWB-H, OPERATION CIRCUIT SCHEMATIC DIAGRAM

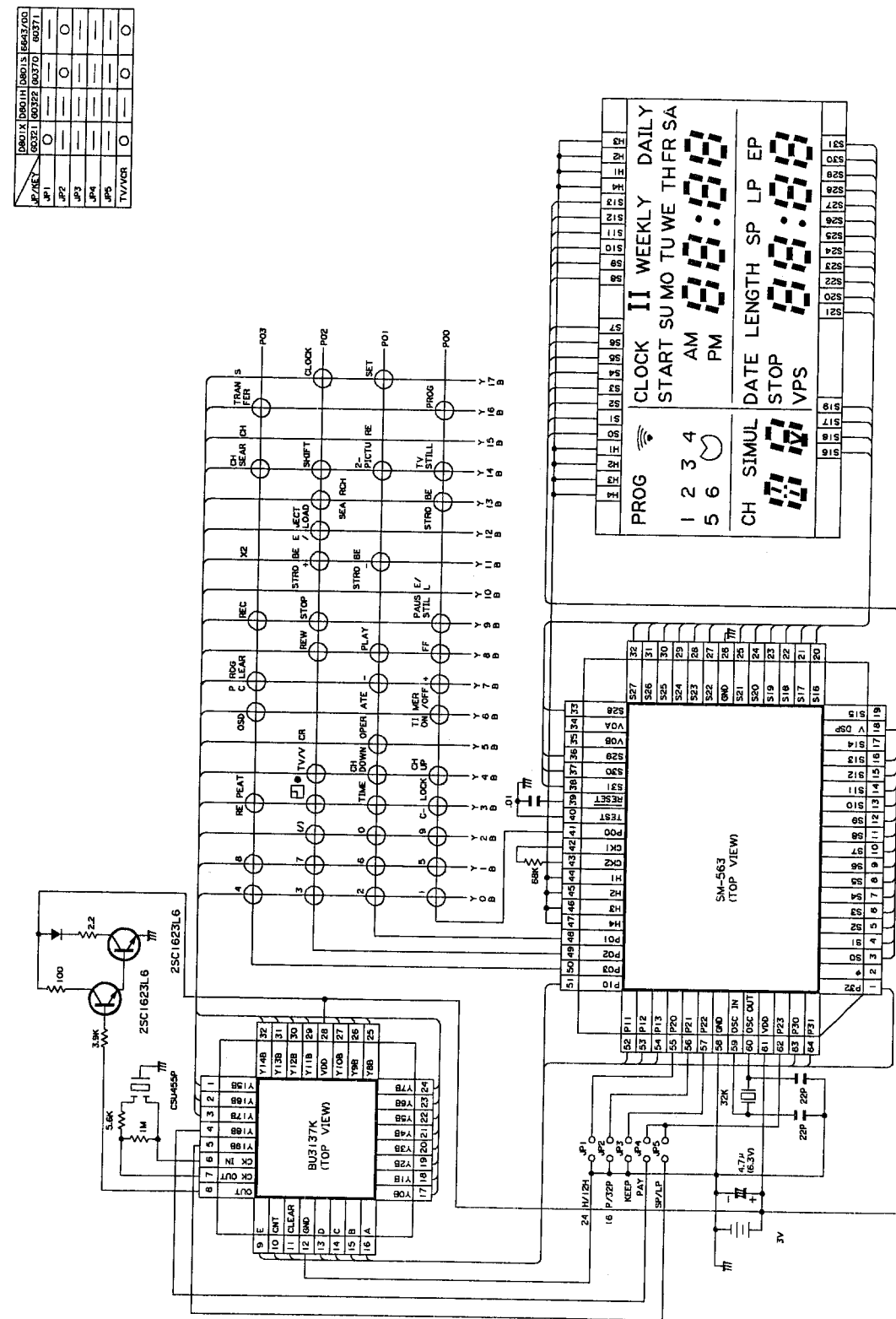


REMOTE CONTROL CIRCUIT SCHEMATIC DIAGRAM

RCNVROOIIGZZ

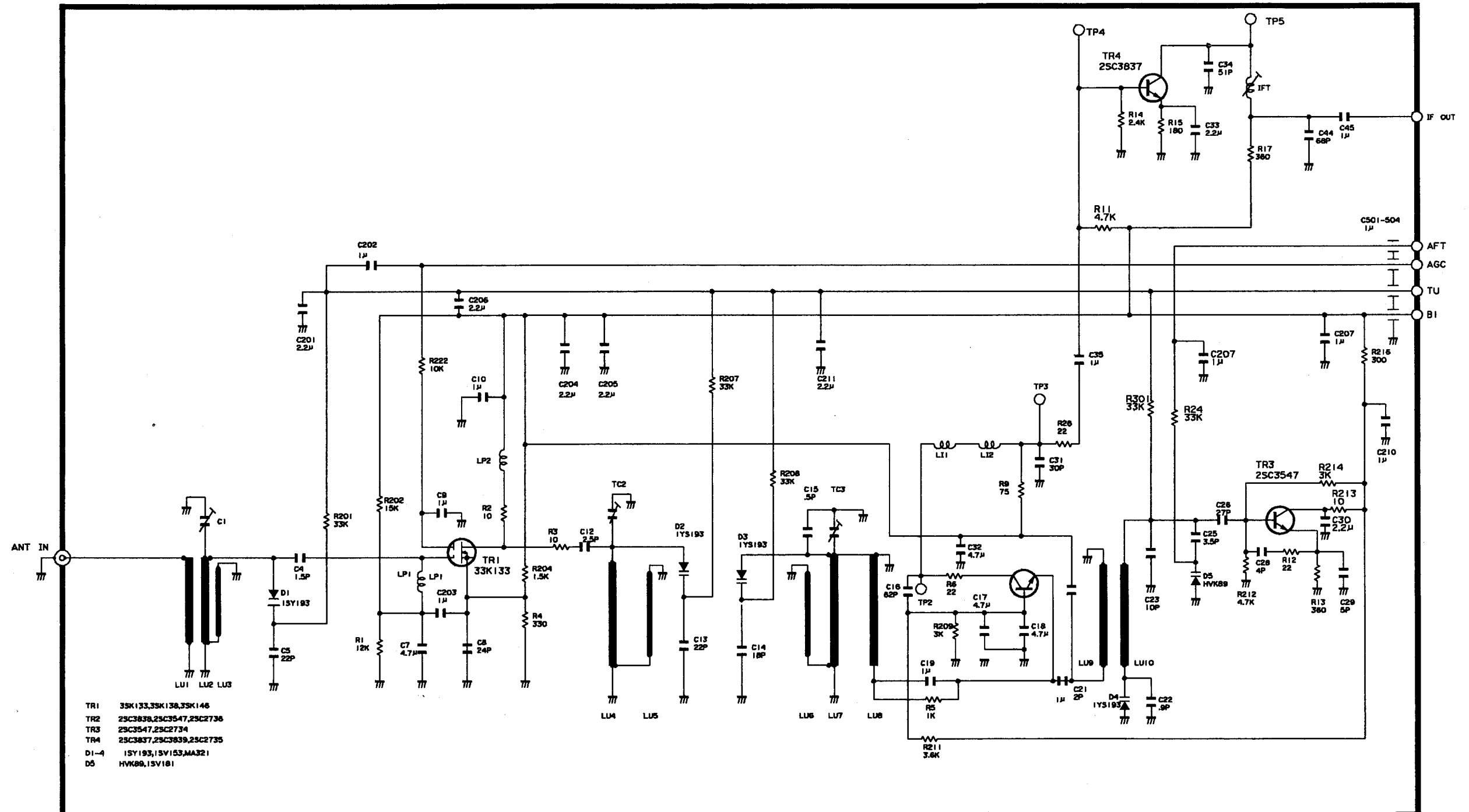


RRMCG0322GES A



TUNER SCHEMATIC DIAGRAM

VTUATEMBI-015



VIDEO TECHNICAL BULLETIN

<u>MODELS</u>	VCA100H	VCA105H	VCA111H	VCA113H
	VCA140H	VCA170H	VCA131H	VCA501H
	VCA5011HM	VCA502H	VCD801H	VCT310H
	VCT510H	VCT72HM		

SYMPTOM After about ten minutes in either the record or playback modes, the capstan motor slows down or stops, resulting in the unit reverting to the standby mode.

CAUSE Lack of lubrication on the capstan motor bearing leads to overheating the drive IC, which then shuts down the unit.

ACTION Remove the capstan shaft from the bearing and lightly lubricate.

If the above action does not cure the problem, the capstan motor will have to be replaced.

VIDEO TECHNICAL BULLETIN

<u>MODELS</u>	VCA100H	VCA105H	VCA111H	VCZ113H
	VCA140H	VCA170H	VCA131H	VCA501H
	VCA5011HM	VCA502H	VCD801H	VCD805H
	VCT310H	VCT510H	VCT72HM	

SYMPTOM Will not accept a tape.

CAUSE Poor finish to the Reel Disc shaft surface.

ACTION Replace the Reel Disc using the part number given below.

<u>REF NO</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>	<u>PRICE CODE</u>
41	Take-up Reel Disc Ass'y	NDAIV1046GEZZ	AG
55	Supply Reel Disc Ass'y	NDAIV1047GEZZ	AG

VIDEO TECHNICAL BULLETIN

<u>MODELS</u>	VCA100HM	VCA140HM	VCA5011HM	VCA502HM
	VCD801H			

REASON The pinch roller assembly is now available as a complete item. Individual items will continue to be available under part numbers in the service manual.

ACTION Add the part number for the pinch roller to the service manual.

<u>REF NO</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>	<u>PRICE CODE</u>
-	Pinch Roler Kit	CLEVF0229GEOO	AR



VIDEO TECHNICAL BULLETIN

<u>MODELS</u>	VCA105HM	VCA111HM	VCA5011HM	VCD801H
	VCD805HM	VCT310HM		

ACTION

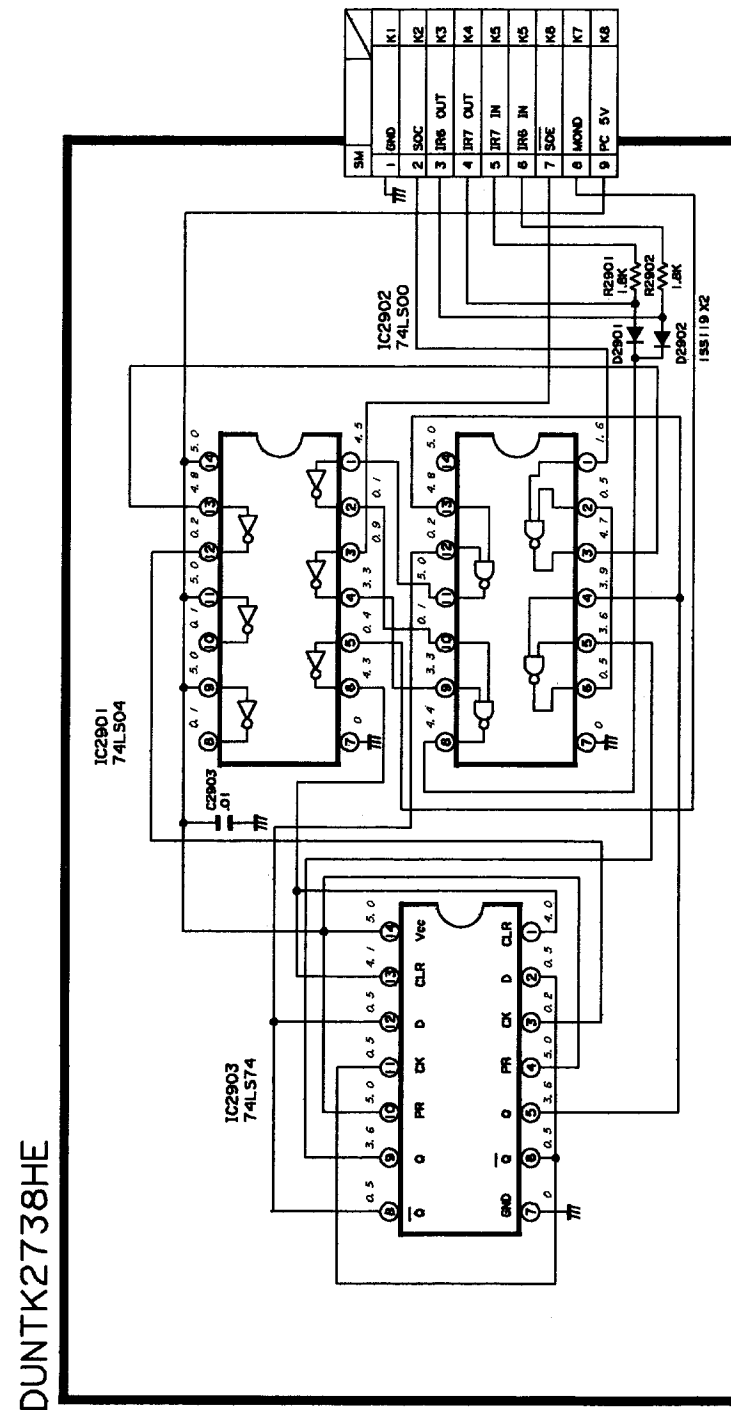
If the earlier processor (TA8644N) is fitted in the place of the later processor (TA8644N-B) then D502 must be replaced using the part number given below.

The diode is fitted in series with pin 16 of IC501 with its cathode pointing towards pin 16.

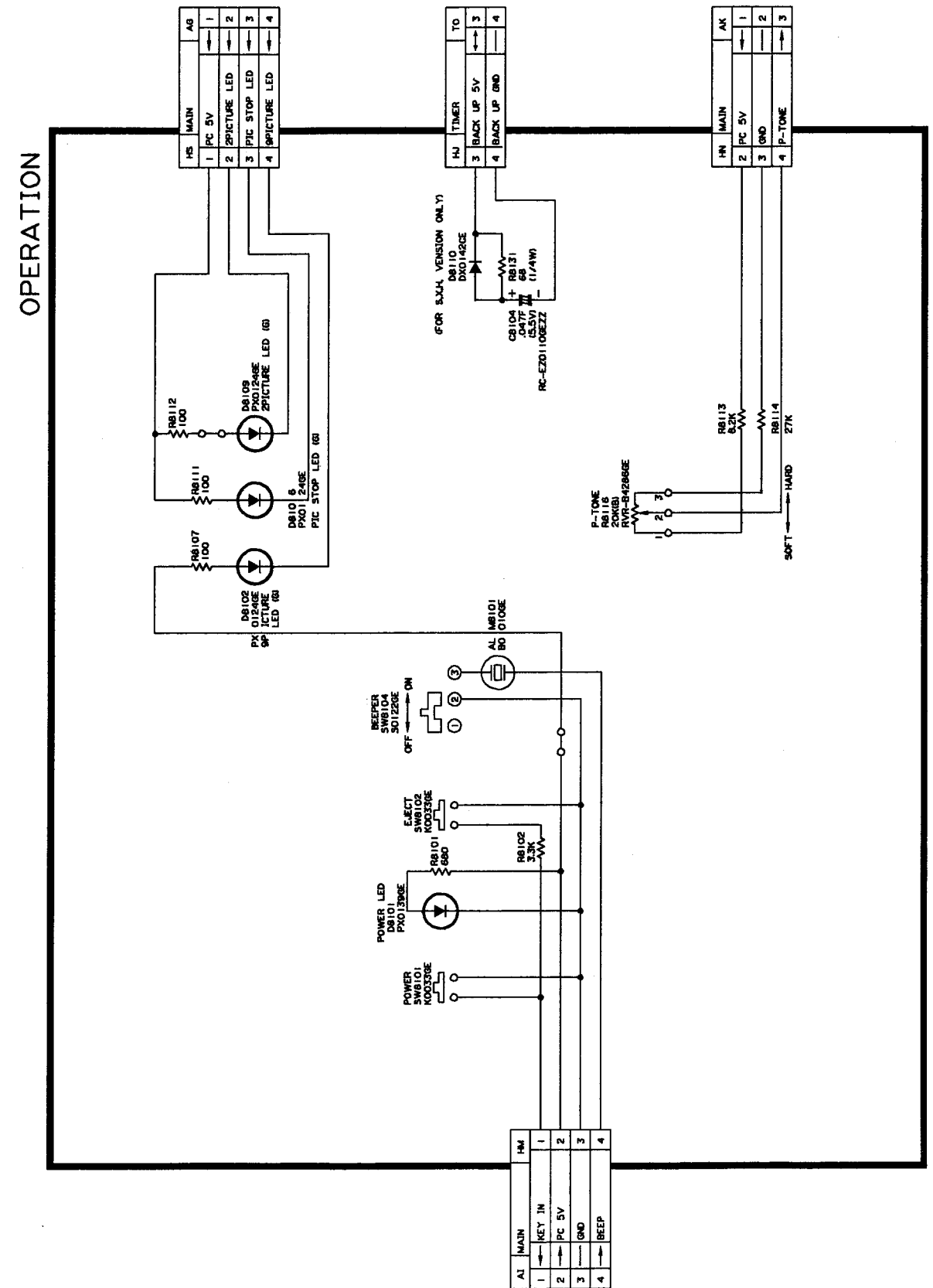
<u>REF NO</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>	<u>PRICE CODE</u>
D502	Diode	VHDISS198//-1	AB



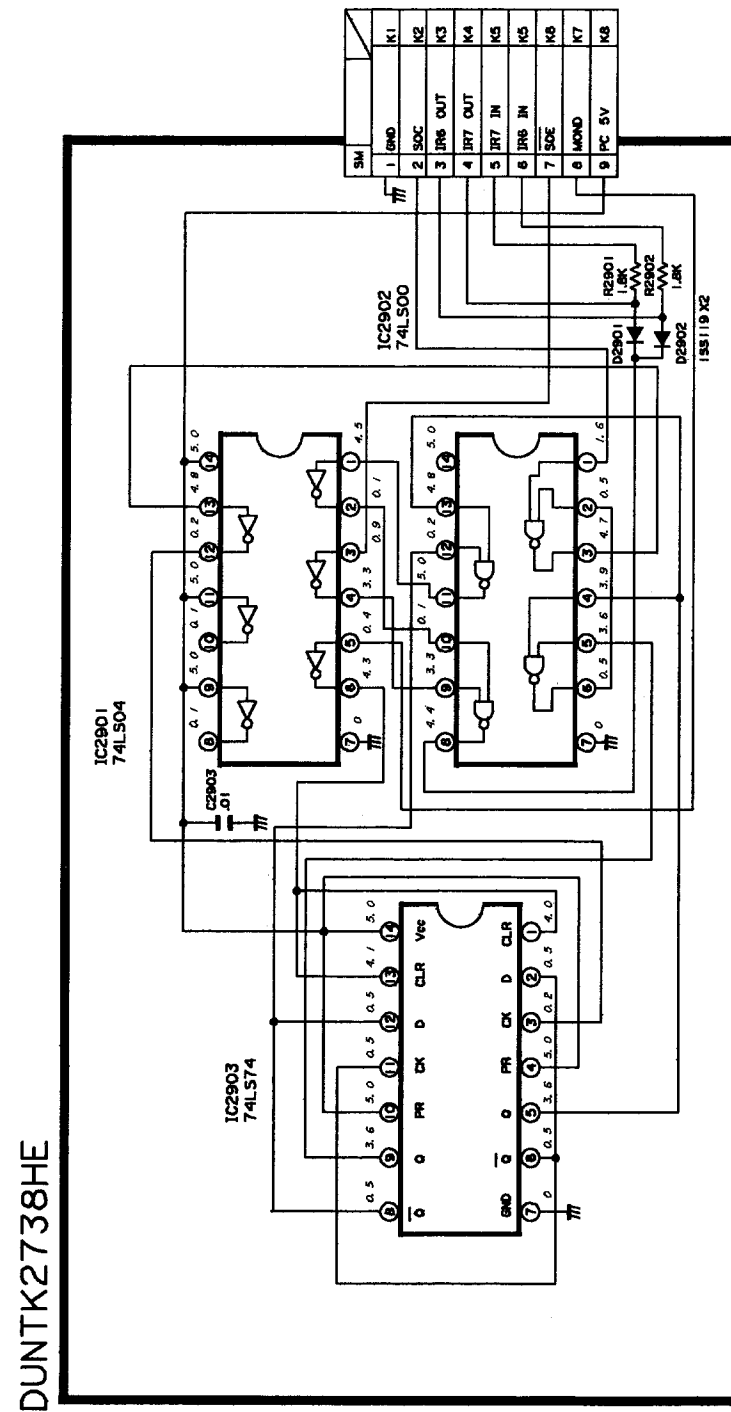
DIGITAL (A) SUB CIRCUIT SCHEMATIC DIAGRAM



PWB-H, OPERATION CIRCUIT SCHEMATIC DIAGRAM

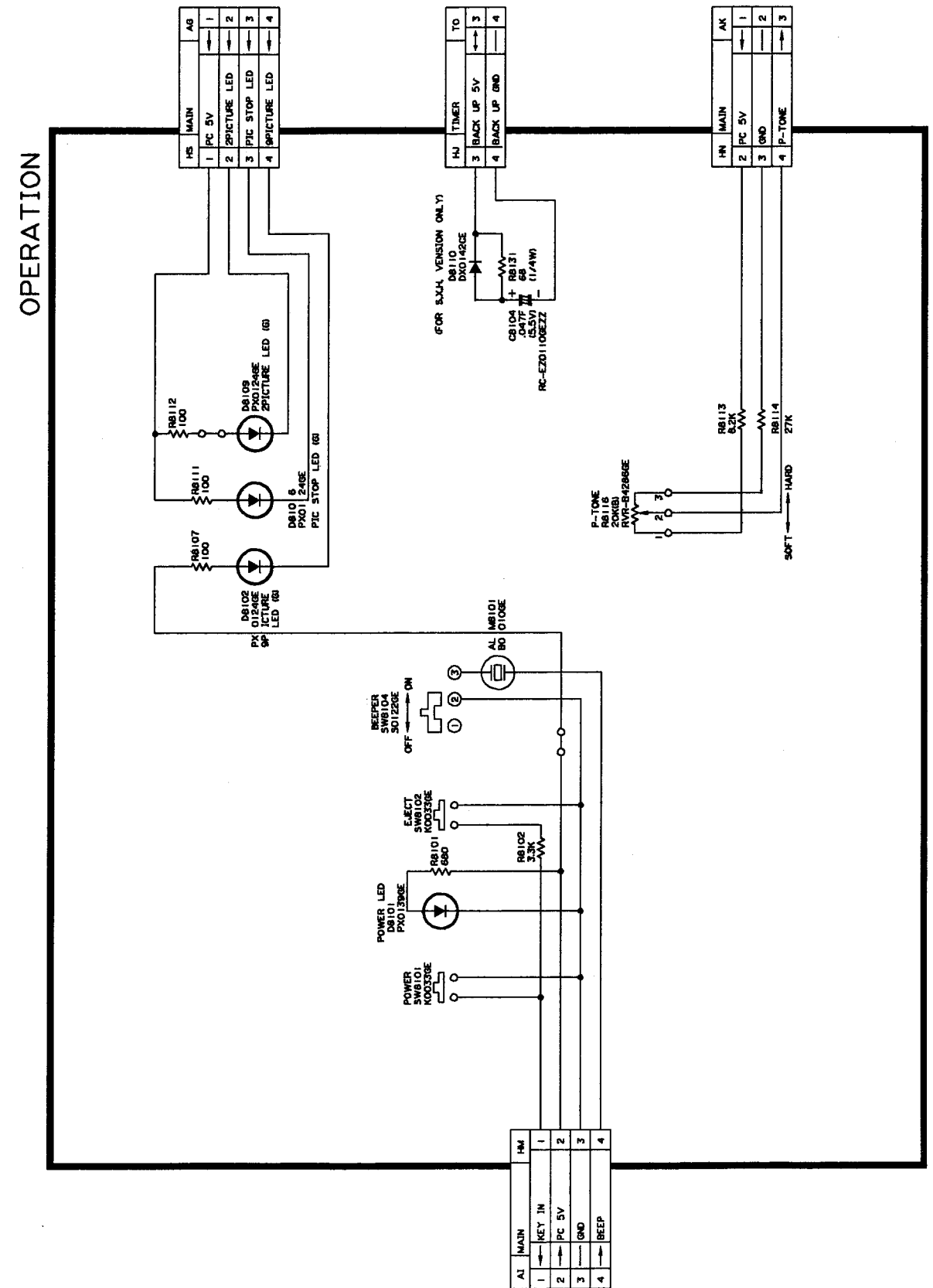


DIGITAL (A) SUB CIRCUIT SCHEMATIC DIAGRAM



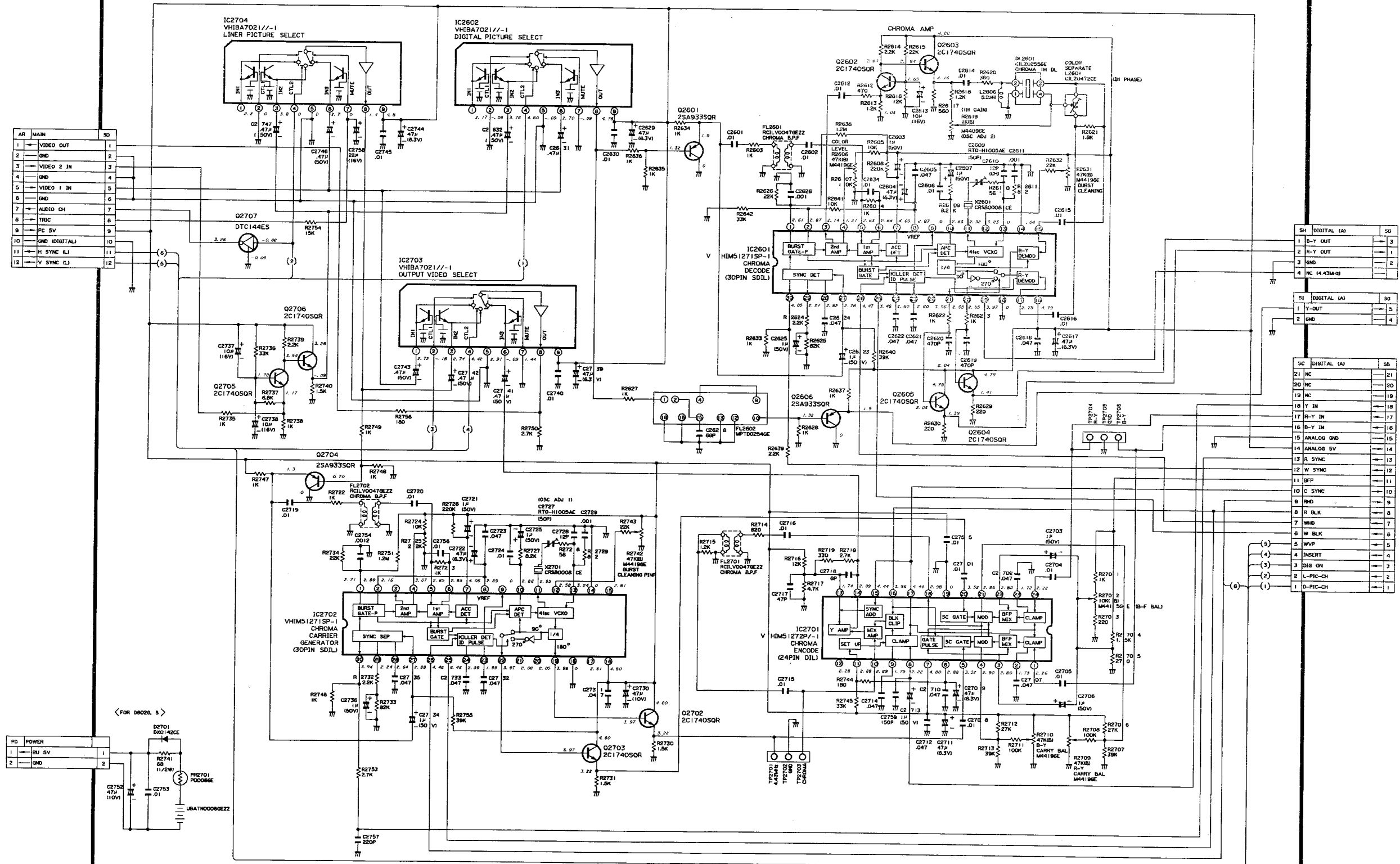
DUNTK2738HE

PWB-H, OPERATION CIRCUIT SCHEMATIC DIAGRAM



PWB-S, DIGITAL (B) CIRCUIT SCHEMATIC DIAGRAM

DUNTK2649HE50



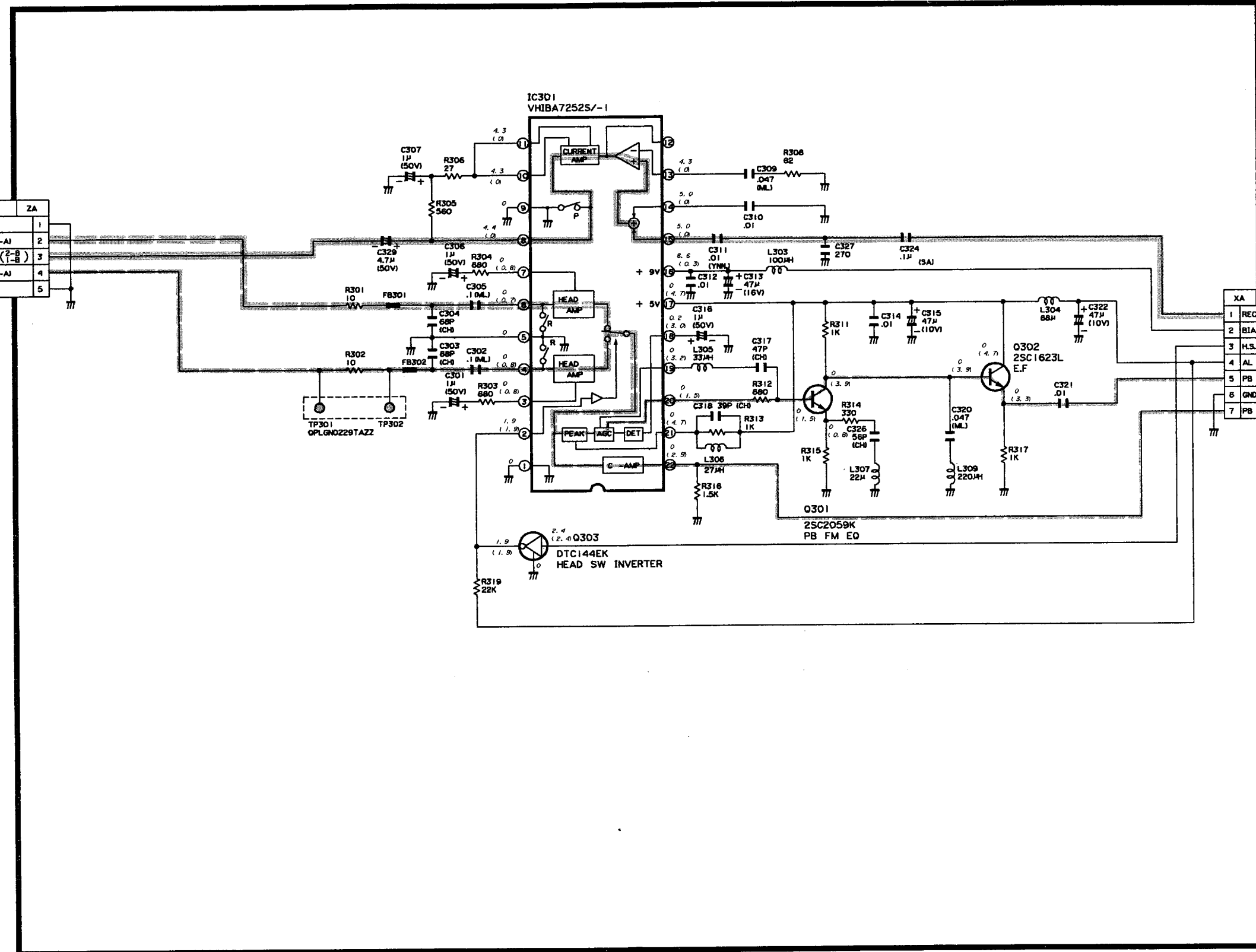
PWB-X, HEAD AMPLIFIER CIRCUIT SCHEMATIC DIAGRAM

Playback luminance signal
Record chrominance signalPlayback luminance signal
Playback chrominance signal

DUNTK2486TM50,52

VIDEO HEAD		ZA
ZA1	GND	1
ZA2	V-HEAD PB (2-A)	2
ZA3	V-HEAD REC (2-B)	3
ZA4	V-HEAD PB (1-A)	4
ZA5	GND	5

XA	Y/C.AUDIO	BB
1	REC FM	7
2	BIAS CTL 9V	6
3	H.S.P	5
4	AL PB 5V	4
5	PB FM	3
6	GND	2
7	PB CHROMA	1



SHARP SERVICE MANUAL

SERVICE-ANLEITUNG

S97P1VC-D801S



VHS VIDEO CASSETTE RECORDER
VHS VIDEO-CASSETTEN-RECORDER

MODELS
MODELL

VC-D801S(BK)
VC-D802G(BK)

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

Im Interesse der Benutzer-Sicherheit (gemäß den Sicherheitsvorschriften in einigen Ländern) sollte dieses Gerät wieder auf seinen ursprünglichen Zustand eingestellt und nur die vorgeschriebenen Teile verwendet werden.

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INHALT

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SPECIFICATIONS

Format: VHS PAL standard
Video recording: Two rotary head helical scan system
Video signals: PAL colour and B/W signals, 625 lines
Recording/playing: 4 hours max. with SHARP
E-time 240 tape
Tape width: 12.7 mm
Tape speed: 23.39 mm/sec.
Antenna: 75 ohm unbalanced
Receiving channel: UHF channel 21 - 69
VHF channel 2 - 12
+ CATV
RF converter output: UHF channel 30 - 39
signal (adjustable). Preset to CH 36
Power requirement: AC 220 V, 50 Hz
Power consumption: Approx. 30 W (VC-D801S)
35 W (VC-D802G)
(with antideew heater)
Operating temperature: 5°C to 40°C
Storage temperature: - 20°C to 55°C
Weight: 7.4 Kg (VC-D801S)
7.6 Kg (VC-D802G)
Dimensions: 430.5 mm (W) x 352 mm (D) x 93 mm (H)
Video
Input: 1.0 Vp-p, 75 ohm
Output: 1.0 Vp-p, 75 ohm
Audio 0 dB = 0.775 Vrms
Input: Line: - 3.8 dB, more than 50k ohm
Output: Line: - 3.8 dB less than 1k ohm
Accessories included: Antenna 75 ohm coaxial connector cable (plug provided)
Operation manual
Remote control unit

*As part of our policy of continuous improvement, we reserve the right to alter design and specifications without notice.

Note: The antenna must correspond to the new standard DIN 45325 (IEC 169-2) for combined VHF/UHF antenna with 75 ohm connector.

TECHNISCHE DATEN

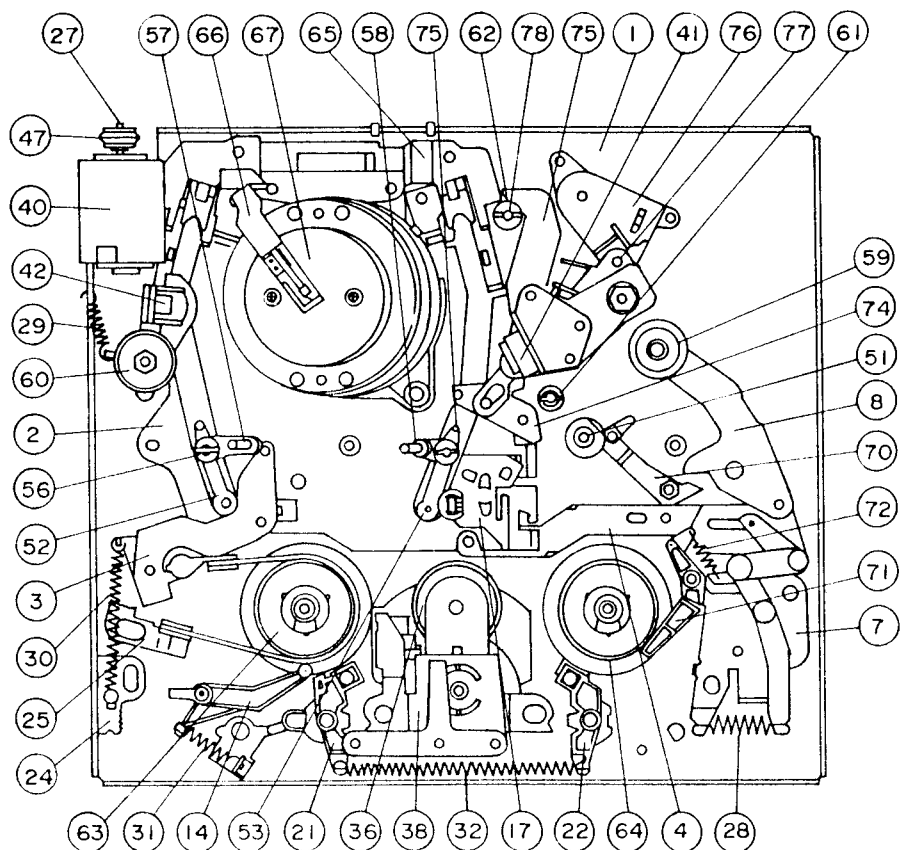
Format: VHS, PAL-Norm
Video-Aufzeichnungssystem: Schrägspuraufzeichnung mit zwei rotierenden Köpfen
Videosignale: PAL-Farb- und Schwarz-weißsignale, 625 Zeilen
Aufzeichnungs-/Wiedergabezeit: 4 Stunden maximal mit E240-Band von SHARP
Bandbreite: 12,7 mm
Bandgeschwindigkeit: 23,39 mm/s
Antenne: 75 ohm unsymmetrisch
Empfangskanäle: UHF-Kanäle 21 - 69
VHF-Kanäle 2 - 12
+ Gemeinschaftsantennenanlage
HF-Wandler: UHF-Kanäle 30 - 39
Ausgangssignal: (einstellbar), voreingestellt auf Kanal 36
Stromversorgung: Netzstrom 220 V, 50 Hz
Leistungsaufnahme: Ungefähr 30 W (VC-D801S)
35 W (VC-D802G)
(mit Heizer zur Entfeuchtung)
Betriebstemperatur: 5° bis 40°C
Lagerungstemperatur: - 20° bis 55°C
Gewicht: 7.4 Kg (VC-801S)
7.6 Kg (VC-802G)
Abmessungen: 430,5 (B) x 352 (T) x 93(H) mm
Video
Eingang: 1,0 Vss, 75 Ohm
Ausgang: 1,0 Vss, 75 Ohm
Audio 0 dB = 0,775 Veff.
Eingang: Direkteingang: - 3,8 dB, mehr als 50 kOhm
Ausgang: Direktausgang: - 3,8 dB, weniger als 1 kOhm
Mitgeliefertes Zubehör: 75 Ohm-Koaxialkabel für Antennenanschluß (mit Stecker)
Bedienungsanleitung
Fernbedienung

*Im Sinne der ständigen Verbesserung behalten wir uns das Recht vor, die äußere Aufmachung und technischen Daten ohne Vorankündigung zu ändern.

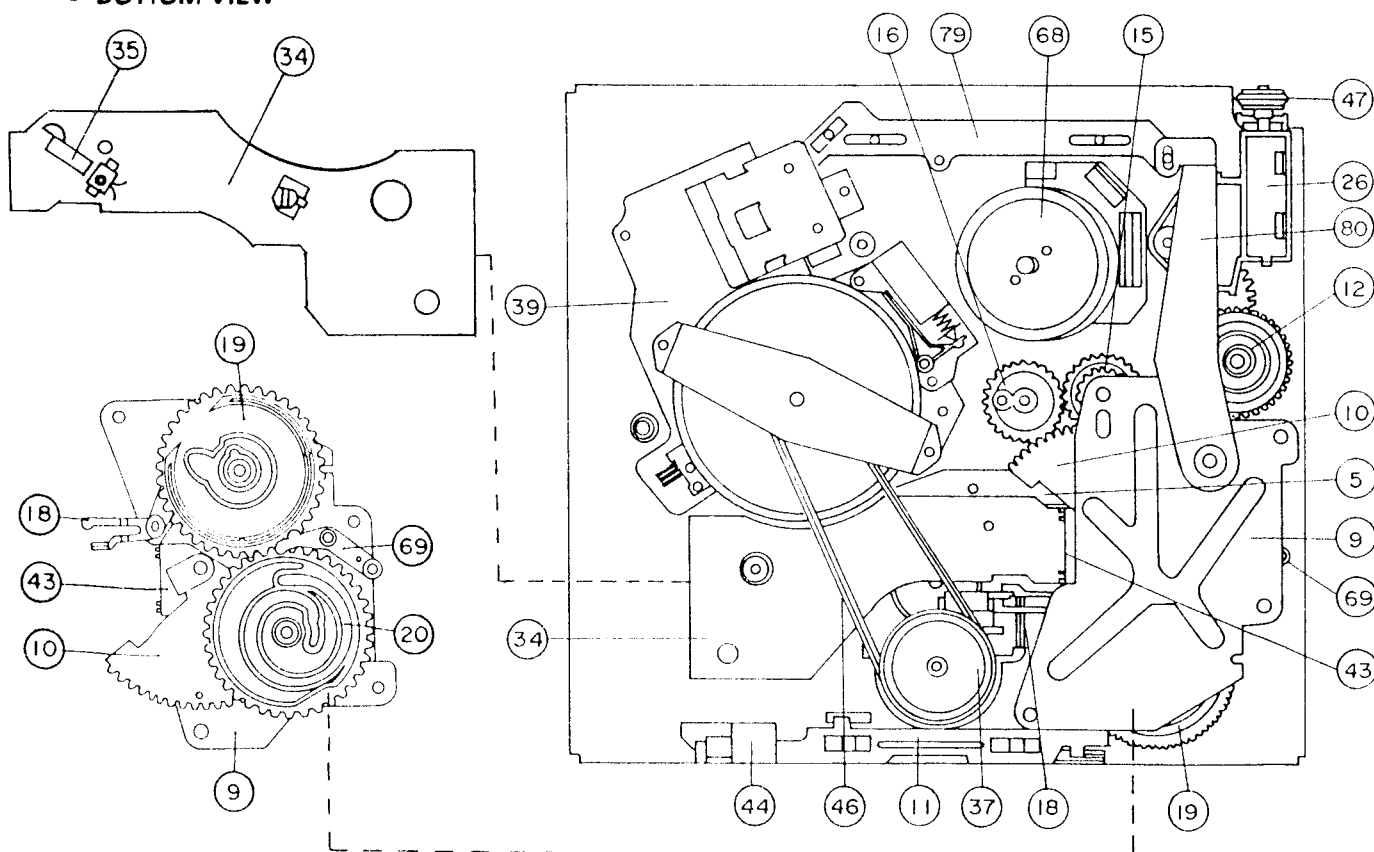
Zur Beachtung: Die Antenne muß der neuen DIN-Norm 45325 (IEC 169-2) für VHF/UHF-Kombiantennen mit 75 Ohm-Anschluß entsprechen.

LOCATION OF MECHANICAL PARTS

• TOP VIEW



• BOTTOM VIEW



LOCATION LIST OF MECHANICAL PARTS

No.	Part Name	No.	Part Name
1	Main chassis ass'y	40	Loading motor
2	Guide plate ass'y	41	Audio/Control head
3	Tension arm ass'y	42	Full-erase head
4	Shifter (B) ass'y	43	Cam switch
5	Shifter (A) ass'y	44	Brake solenoid
7	Pinch roller link plate ass'y	46	Reel belt
8	Pinch roller lever	47	Loading belt
9	Mechanism control bracket	51	Capstan shaft
10	Segment gear ass'y	52	Pole base (A) (supply side)
11	Brake drive lever	53	Pole base (B) (take-up side)
12	Relay gear (B)	56	Guide roller (supply side/take-up side)
14	Auxiliary brake lever	57	Supply slant pole
15	Loading gear (A)	58	Take-up slant pole
16	Loading gear (B)	59	Pinch roller
17	LED holder	60	Supply impedance roller
18	Torque change lever	61	Retaining guide
19	Brake cam	62	X-position adjusting nut
20	Master cam	63	Supply reel disk
21	Supply brake lever	64	Take-up reel disk
22	Take-up brake lever	65	V base
24	Tension adjusting plate	66	Earth brush
25	Tension band ass'y	67	Drum
26	Loading block	68	Drum DD motor
27	Loading motor pulley	69	Tension release lever
28	Pinch pressure spring	70	Reverse guide ass'y
29	Full-erase head arm spring	71	Universal brake
30	Tension arm spring	72	Universal brake spring
31	Auxiliary brake spring	73	—————
32	Main brake spring	74	Half Load lever
34	Reel sensor PWB	75	Relay gear lever A
35	Shifter switch	76	Relay gear lever B
36	Reel idler	77	Connection lever
37	Reel pulley	78	Audio/Control arm
38	Reel drive unit bracket	79	Half Load Shifter
39	Capstan DD motor	80	Cam lever ass'y

ADJUSTMENT, REPLACEMENT, ASSEMBLING AND TOOLS NECESSARY FOR MECHANICAL ADJUSTMENT



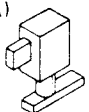
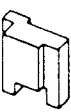



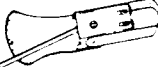
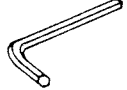

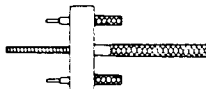

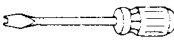
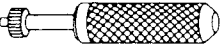


● Outline

Periodical maintenance is necessary for efficient operation. In some instance field service may be achieved with common tools. More extensive

service will require special tools and test equipment. Appropriate tools should be used at all times.

TOOLS NECESSARY FOR ADJUSTING THE MECHANICAL UNITS

The following tools are recommended for proper service and satisfactory repair.

No.	Jig Item	Part No.	Code	Configuration	Remarks
1	Reel Disk Height Adjusting Jig	JiGRH0002	BR		These Jigs are used for checking and adjusting the Reel Disk Height.
2	Master Plane Jig	JiGMP0001	BY		
3	A/C Head Tilt Adjusting Jig	JiGACH51B	BU	(A)  (B) 	This Jig is used for height adjustment of the running tape to the Video Head. This is used for take-up retaining guide height adjusting.
	Fixed guide height adjusting jig	JiGGH51B	BM		
4	Torque Gauge 90 g	JiGTG0090	CM		These Jigs are used for checking and adjusting the torque of Take-up and Supply Reel disks.
	Torque Gauge 1.2 kg	JiGTG1200	CN		
5	Gauge Head	JiGTH0006	AW		
6	Cassette Torque Gauge	JiGVHT-063	CZ		This cassette torque gauge is used for checking and adjusting torque of take-up and supply reel and for measuring tape back tension.
7	Tension Gauge (300g)	JiGSG0300	BF		There are several Gauges used for the tension measurements, 300 g and 2.0 kg.
	Tension Gauge (2.0 kg)	JiGSG2000	BS		
8	Hex Wrench (0.9 mm)	JiGHW0009	AE		These Jigs are used for loosening or tightening special Hexagon type screws.
	Hex Wrench (1.2 mm)	JiGHW0012	AE		
	Hex Wrench (1.5 mm)	JiGHW0015	AE		
9	Alignment Tape (PAL)	VROCPSV	CK		This tape is especially used for electrical fine adjustment.
10	Drum Replacing Jig	JiGDT-0001 or JiGDT-0001CD	BG AZ		This is used for the replacement of the VCR's upper drum.
11	Tension Gauge Adaptor	JiGADP003	BK		This Jig is used for the tension gauge. Rotary Transformer Clearance Adjusting Jig.
12	Special Bladed Screwdriver	JiGDRIVERH-4	AP		This Screwdriver is used for adjusting the guide roller height.
13	Tension Band and Plate Adjusting Jig	JiGDRIVER-6	BM		This Jig is used for adjusting tension band and tension plate adjust.
14	Torque Driver	JiGTD1200	CB		This Jig is used for fixing measurement, 12 kg.
15	AC Head Height Adjusting Box Driver	JiGDRIVER110-7	AS		This Jig is used for height adjustment of the A/C head.

NOTE:

Current JiGMA0001 contains master plane (JiGMP0001) and Disk Height Adjusting Jig (JiGRH0001). Even though new Disk Height Adjusting Jig (JiGRH0002) covers wider height, this new Jig (JiGRH0002) can be used for current JiGRH0001, however current Jig (JiGRH0001) cannot be used as JiGRH0002. Master plane (JiGMP0001) can be used with JiGRH0001, and also JiGRH0002.

* * * * *

MECHANICAL PARTS REQUIRING PERIODICAL INSPECTION

Use the following table as a guide to maintain the mechanical parts in good operating condition.

Parts	Maintained every	500 hrs.	1000 hrs.	1500 hrs.	2000 hrs.	3000 hrs.	Remarks
Guide roller ass'y		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Abnormal rotation or significant vibration requires replacement.
Supply impedance roller		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Supply impedance roller (inner)			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	Clean with pure high quality isopropyl alcohol.
Supply impedance roller flange B		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Clean tape contact area with the specified cleaning liquid.
Retaining guide		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Guide flange B		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Slant pole		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Video head		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Clean tape contact area with the specified cleaning liquid.
Full-erase head		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
A/C head		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Capstan belt			<input type="checkbox"/>		<input type="checkbox"/>		Clean rubber and rubber contact area with the specified cleaning liquid.
Pinch roller		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Reel belt			<input type="checkbox"/>		<input type="checkbox"/>		
Loading belt			<input type="checkbox"/>		<input type="checkbox"/>		
Capstan motor						<input type="checkbox"/>	
Loading motor						<input type="checkbox"/>	
Supply/take-up reel disk			<input type="checkbox"/> <input type="triangle"/>		<input type="checkbox"/> <input type="triangle"/>		Clean with pure high quality isopropyl alcohol.
Tension band ass'y						<input type="checkbox"/>	
Reel drive unit						<input type="checkbox"/>	
Reel idler		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Reel pulley		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Supply/take-up brake lever					<input type="checkbox"/>		

NOTE: ○: Part replacement.

□: Cleaning (For cleaning, use a lint-free cloth dampened with pure isopropyl alcohol).

△: Oil refilling (The indicated point should be lubricated with high quality spindle oil every 1000 hrs).

This model has no adjusting volumes for torques, tension, etc. If the reading is outside the specified range, clean or replace the part.

REMOVAL ADJUSTMENT AND REPLACEMENT OF CASSETTE HOUSING CONTROL ASSEMBLY

Notes:

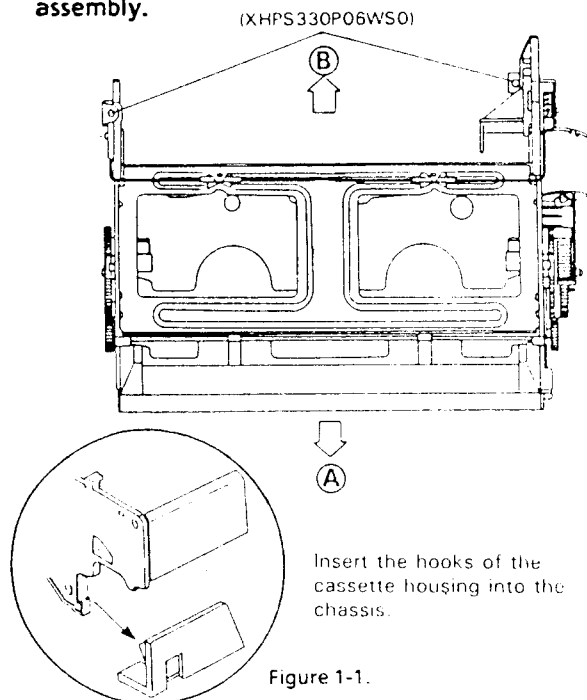
1. During removal and installation be careful not to strike the nearby guide pin, drum, etc.
2. Before removal or installation, be sure to unplug the recorder from the AC outlet.

• Removal

1. Put the unit in the cassette ejected position.
2. Disconnect the connector at the right side of the cassette housing control assembly (Be careful not to break the leads.)
3. Remove the two cassette housing installation screws.
4. Move the cassette housing control assembly (Fig. 1-1) in the direction of arrow ⇒ ⑧, and pull it out straight upward.

• Assembly

1. Connect the connector at the right side of the cassette housing control assembly.
2. Insert the tabs of the cassette housing control assembly into mechanism chassis, move it in the direction of arrow ⇒ ⑧, and secure temporarily. Check to be sure that the cassette housing control assembly is in the correct position, and then tighten the two screws (XHPS330P06WS0).
3. Correctly place the lead wiring of the connector at the right side of the cassette housing control assembly.



DISASSEMBLY AND REASSEMBLY OF WORM WHEEL ASSEMBLY

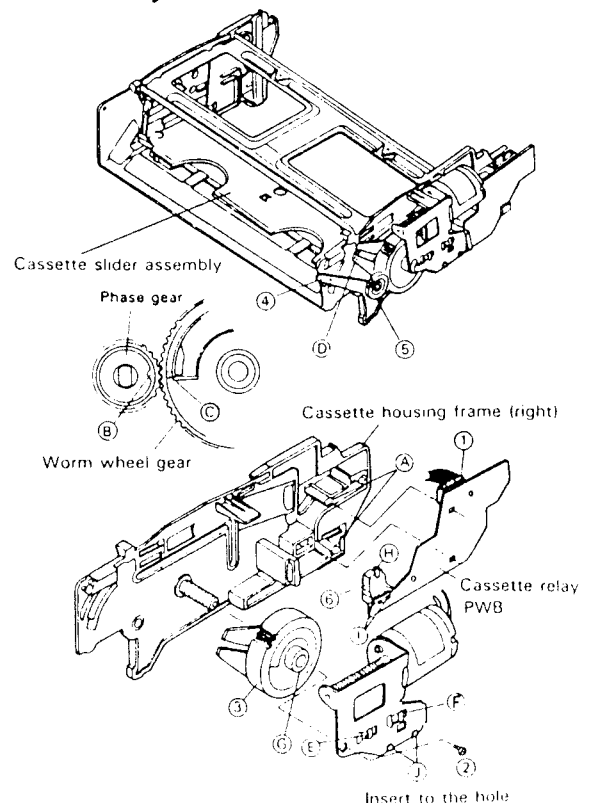
• Disassembly (Fig. 1-2)

1. Remove the lead connector ① from the cassette relay PWB.

2. Loosen the two tabs ② at the cassette relay PWB and remove the cassette relay PWB from the frame.
3. Remove the screw ③ from the cassette motor bracket and detach the cassette motor assembly together with the cassette relay PWB from the cassette housing frame.
4. Withdraw the worm wheel assembly ④.

• Reassembly (Fig. 1-2)

1. Move the cassette slider assembly towards the cassette lid.
2. Turn the phase gear ⑤ clockwise until it stops.
3. After setting up the worm wheel assembly, fit the alignment mark ⑥ of the worm wheel assembly to the alignment mark ⑦ of the phase gear. Then insert them into the frame shaft: this time, check that the tab ⑧ of the cassette slider assembly is engaged with the drive arm groove.
- The worm wheel is likely to fall off the frame shaft in this step: be sure to hold the worm wheel by hand.
4. Align the tab ⑨ of the timing lever with the worm wheel groove ⑩ and secure the worm wheel assembly with the screw ⑪.
5. Align the tab ⑫ of the timing lever with the groove ⑬ of the cassette mode switch ⑭, and secure the cassette relay PWB with the frame's tab ⑮: this time, check that the two tabs ⑯ of the cassette mode switch are surely engaged with the cassette motor bracket groove ⑰.
6. Insert the lead connector into the socket of the cassette relay PWB.



• Set up of worm wheel assembly (Fig. 1-3)

1. Put the tab **A** of the drive arm **1** into the hole **B** of the drive gear **2**.
2. Hook both ends of the drive spring **3** onto the tab **A** of the drive arm and tab **C** of the drive gear respectively.
3. Hook one end **E** of the drive reciprocating spring **4** onto the tab **D** of the drive gear assembly and mount another end **F** of the drive reciprocating spring onto the tab **G** of the drive gear: this time, hold the end **F** of the drive reciprocating spring by hand.
4. Fit the tab of the worm wheel gear **5** onto the tab **C** of the drive gear.
5. Using a tapered screwdriver, hook the end **F** of the drive reciprocating spring onto the tab **J** of the worm wheel gear: check that both ends of the drive reciprocating spring have been engaged with the respective tabs of the drive gear assembly.
6. Holding the drive gear by hand, turn the worm wheel gear by the other hand counterclockwise. Then the tab **C** of the drive gear will be engaged with the hole **I** of the worm wheel gear **5**.
(The worm wheel gear doesn't tend to rotate reversely but it is likely to slip out of the shaft **H** of the drive gear. To avoid this, hold both the drive gear and worm wheel gear by hand.)

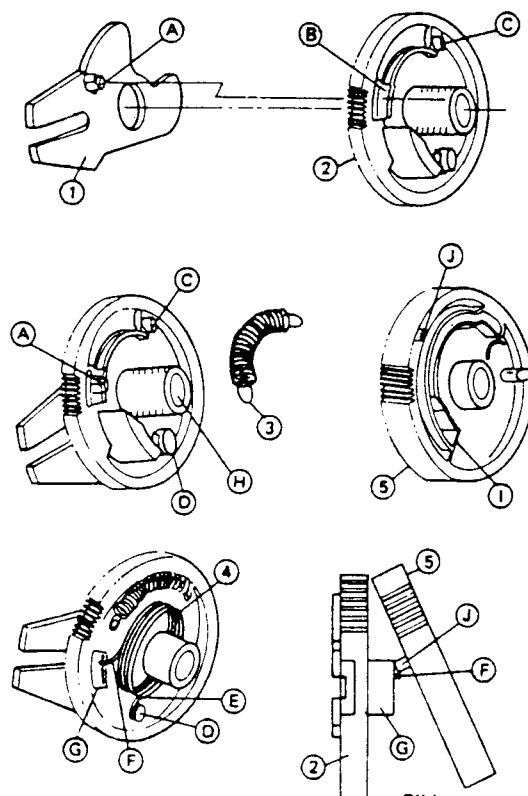


Figure 1-3.

REPLACEMENT OF CASSETTE LEVER ASSEMBLY

• Disassembly (Fig. 1-4)

1. Remove the slit poly-slider washers from the right and left shafts.
2. Turn the worm gear **1** by hand counterclockwise until the cassette slider assembly **2** reaches the bottom position.
3. Slightly extend the right and left frames **3** to allow the tabs **A** of the cassette slider assembly **2** to go out of the holes of the right and left frames.
4. Remove the lever spring **7** off the slider **2** and the cassette lever **5**. Be careful not to deform its hooks.
5. Remove the slit poly-slider washer **4** (1.4W6-0.5) from the slider shaft.
6. Unsnap the cassette tip **6** from the cassette lever **5** by pressing the lever's center. Be careful not to deform the cassette lever **5**.

• Reassembly

Take the reverse order of the above steps 1 thru 6.

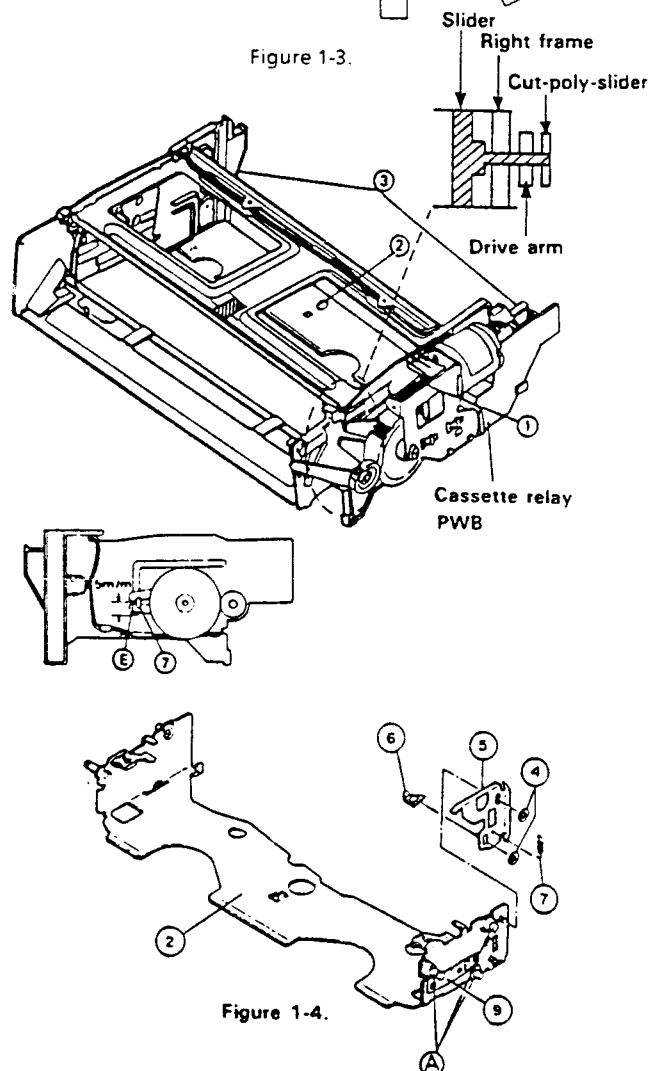


Figure 1-4.

TO RUN A TAPE WITHOUT THE CASSETTE HOUSING CONTROL ASSEMBLY

1. Open the lid of a cassette tape by hand and hold it with a piece of vinyl tape.
2. Set the cassette tape in the tape mechanism. Then, stabilize the cassette tape with a weight (500 g or less).

Note: The weight should not be more than 500 g.

REMOVAL AND HEIGHT ADJUSTMENT OF REEL DISKS

• Removal of supply reel disk:

1. Remove the tension band ⑥ and tension arm ②.
 2. Remove the split washer ①.
 3. Pull the supply reel disk ③ upwards, and replace.
- * At this time, remove the height adjusting washer ⑤ and clean it.

• Removal of take-up reel disk:

1. Remove the split washer ①.
 2. Pull the take-up reel disk ④ upwards, and replace.
- * At this time, remove the height adjusting washer ⑤ and clean it.

Notes:

1. After replacing either of the reel disks, be sure to perform the height adjustment procedure.
2. Take care not to damage the tension band.
3. Be careful not to deform the auxiliary brake lever, supply brake lever, take-up brake lever and universal brake lever. (See page 3; item 14, 21, 22 and 71.)
4. Check the tension pole position. (See pages 11 and 12.)

• Replacement of supply reel disk:

1. Clean the reel disk shaft, and set the height adjusting washer ⑤.
2. Place the new supply reel disk onto the shaft.
3. Adjust the reel disk height by using the master plane and reel disk height adjusting jig.
4. Take the new supply reel disk off, apply oil (high quality spindle oil) to the reel disk shaft and again place the disk onto the shaft.
5. Replace the split washer ①.
6. Replace the tension arm ② and tension band ⑥.

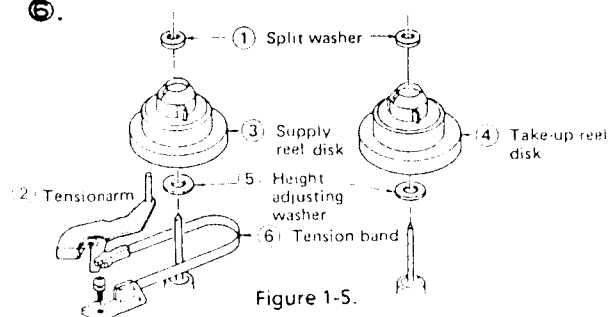


Figure 1-5.

• Replacement take-up reel disk:

1. Clean the disk shaft, and set the height adjusting washer ⑤.
2. Place the new take-up reel disk onto the shaft.
3. Adjust the reel disk height by using the master plane and reel disk height adjusting jig.
4. Take the new reel disk off, apply oil (high quality spindle oil) to the reel disk shaft and again place the disk onto the shaft.
5. Replace the split washer ①.

Notes:

1. Take care not to damage the reel disk shaft's surface with the tools.
2. After replacement, check back the tension in video search (VS) mode (see page 11) and checking of brake torque. (See page 13.)

HEIGHT ADJUSTMENT

1. Remove the cassette housing, and place the master plane onto the mechanism unit as shown in Fig. 1-6(a), taking care not to hit the drum.
2. Insure that the reel disk is lower than the part ④ but higher than the part ③ of Fig. 1-6(b), by using the reel disk height adjusting jig. If the height is not correct use the height adjusting washers. Backlash on the shaft should be 0.1 to 0.8 mm.

Note: Whenever replacing the reel disk, perform the height adjustment.

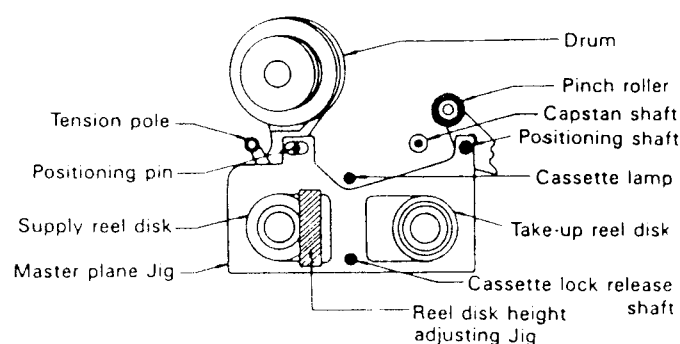


Figure 1-6.(a) top view

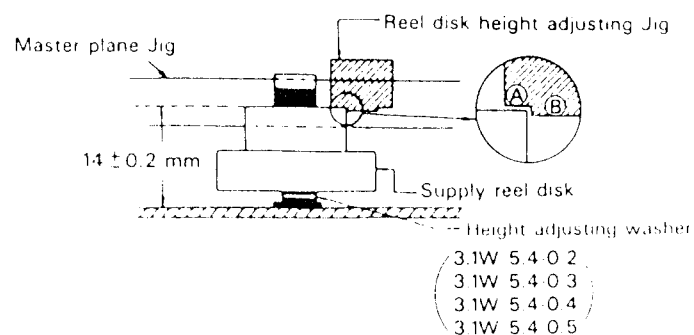


Figure 1-6.(b) side view

ADJUSTMENT OF FAST FORWARD TORQUE

Notes:

1. The torque gauge is liable to slip off the reel disk when rotation starts.
2. Perform this check without the use of a cassette tape.

• Checking (See Fig. 1-7)

1. Remove the cassette housing.
2. Set the torque gauge on the take-up reel disk and push the fast forward button.
3. Turn the torque gauge very slowly by hand (one rotation every 2 to 3 seconds) and check that it indicates a little more than 600 g.cm. Check that there is no slippage between the reel idler and relay idler or take-up reel disk.

• Adjustment

If the fast forward torque is less than 600 g.cm, use isopropyl alcohol to clean the relay idler, reel idler and take-up reel disk, then recheck the torque. If fast forward torque is still less than 600 g.cm, replace the reel belt.

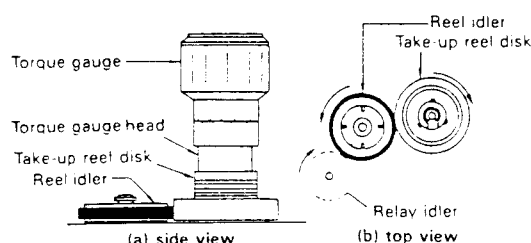


Figure 1-7.

ADJUSTMENT OF REWIND TORQUE

Notes:

1. The torque gauge is liable to slip off the reel disk when rotation starts.
2. Do not lock the reel disk, and avoid making this measurement for an extended period.

• Checking (See Fig. 1-8)

1. Remove the cassette housing.
2. Set the torque gauge on the supply reel disk and push the rewind button.
3. Turn the torque gauge very slowly by hand (one rotation every 2 to 3 seconds) until it indicates a little more than 600 g.cm. Check that there is no slippage between the reel idler and relay idler or supply reel disk.

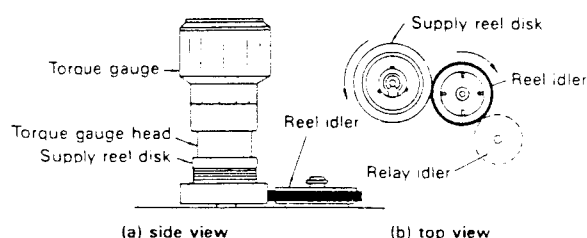


Figure 1-8.

• Adjustment

If the rewind torque is less than 600 g.cm, use isopropyl alcohol to clean the relay idler, reel idler and supply reel disk, then recheck the torque. If rewind torque is still less than 600 g.cm, replace the reel belt.

ADJUSTMENT OF PLAYBACK TORQUE

• Checking

1. Remove the cassette housing.
2. Place a torque meter cassette in the mechanism and set the mechanism to the record mode. Check that the torque is within the specified range.

Torque in mode: 110 ± 40 g.cm

Note:

The measured torque fluctuates due to the rotational deviation of the reel drive unit. Use the center of the fluctuating range as the measured value.

3. If the torque is outside the specified range, clean the reel idler, take-up reel disk, and relay idler with isopropyl alcohol. Then recheck the torque.
4. Check that the torque in the record mode is within the specified ranges.
5. If the playback torque is still outside the specified range, replace the reel drive unit.

CHECKING THE FAST FORWARD BACK TENSION

Note:

Set the torque gauge securely on the supply reel disk; if the torque gauge is loose above the reel disk an inaccurate measurement will result.

• Checking

1. Remove the cassette housing.
2. Push the fast forward button to place the unit in the fast forward mode.
3. Place the torque gauge on the supply reel disk, turn it clockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within 37 ± 5 g.cm.

CHECKING THE REWIND BACK TENSION

Note:

Set the torque gauge securely on the reel disk; if the torque gauge is loose above the reel disk an inaccurate measurement will result.

• Checking

1. Remove the cassette housing.
2. Push the rewind button to place the unit in the rewind mode.
3. Place the torque gauge on the take-up reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within 20 ± 5 g.cm.

CHECKING THE VIDEO SEARCH BACK TENSION

Note:

Set the torque gauge securely on the take-up reel disk; if the torque gauge is loose above the reel disk an inaccurate measurement will result.

• Checking

1. Remove the cassette housing.
2. Push the play button to place the unit in the playback mode.
3. Push the video search forward button to place the unit in the video search rewind mode.
4. Place the torque gauge on the take-up reel disk, turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is between 30 ± 8 g.cm.

CHECKING THE PINCH ROLLER PRESSURE

1. Remove the cassette housing.
2. Push the play button to place the unit in the playback mode.
3. Hook the tension gauge adapter around the pinch roller shaft.
4. Using a tension gauge, pull the pinch roller in the direction of arrow → ① so that the pinch roller moves away from the capstan shaft.
5. Gradually release the pressure in the direction of arrow → ② to allow the pinch roller to touch the capstan shaft. When the pinch roller just touches the capstan shaft, read the indication on the gauge.
6. Check that the reading of the tension gauge is in the range of 1000 to 1200 gr.

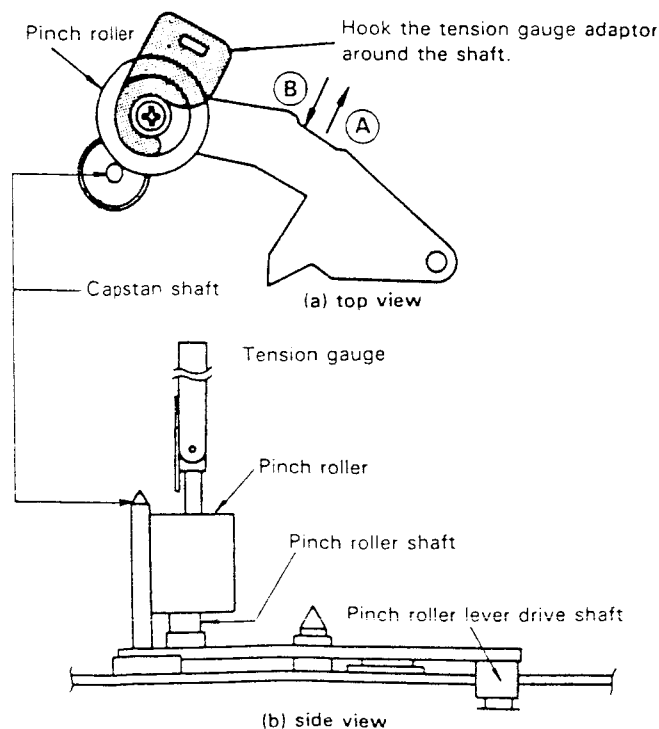


Figure 1-9.

CHECKING THE REEL IDLER PRESSURE

1. Remove the cassette housing.
2. Place the reel idler in its center position as shown in Fig. 1-10.
3. Using a tension gauge, push the reel idler in the direction of arrow → ① so that the reel idler moves away from the relay idler.
4. Release the pressure gradually in the direction of arrow → ②, so that the reel idler touches the relay idler again. Check that the reading of the tension gauge is within 105 to 145 g.cm.

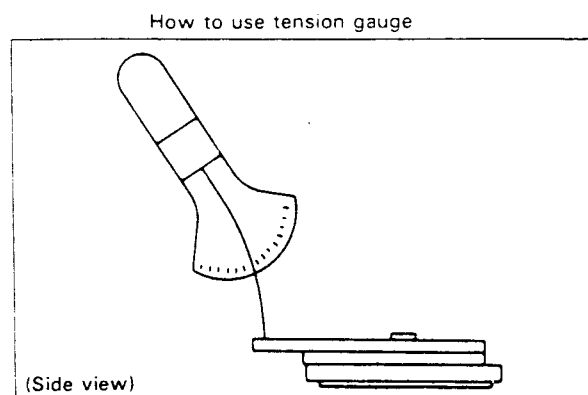
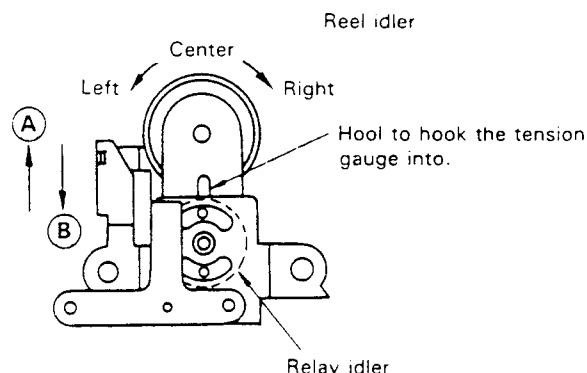


Figure 1-10.

ADJUSTMENT OF TENSION POLE

• Position checking (Fig. 1-11)

1. Remove the cassette housing.
2. Load a video cassette tape and push the record button to place the unit in the recording mode.
3. The pole bases A and B (see page 3; item 52 and 53.) operate to bring the tape outside the cassette housing and simultaneously the tension pole moves to the left, loading the tape. At that time (loading mode), check the position of the tension pole.
4. At the end of the tape (E-180), check that the tension pole's center is 0.6 to 1.0 mm to the right of the supply impedance roller's center.
5. Check that the tape is neither curled against the flange of the supply impedance roller nor mounted over it.
6. During the video search REW mode, check that the supply reel disk is free of the tension band.

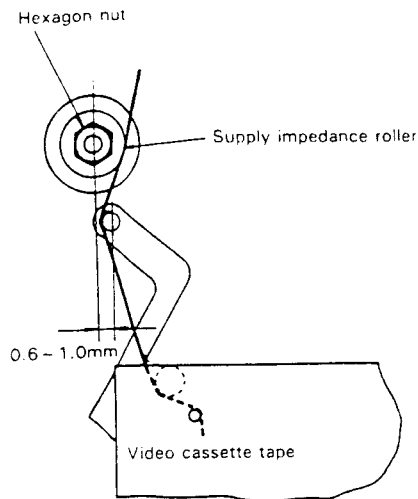


Figure 1-11.

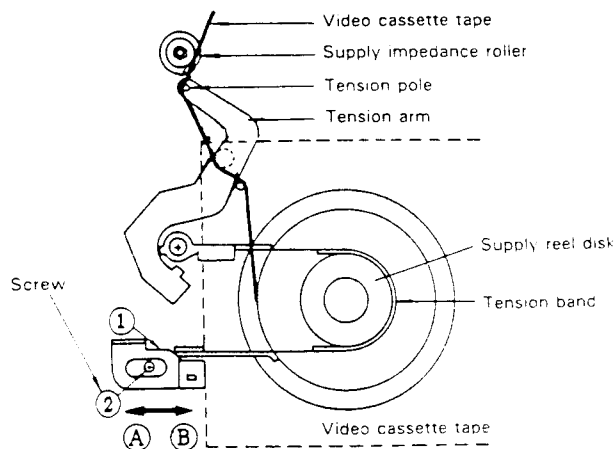


Figure 1-12.

• Position adjustment (Fig. 1-12)

1. If the tension pole is more than 1.0 mm to the right of the supply impedance roller's center, shift the tension band control bracket ① in the direction of arrow → ②, and tighten the screw ③.
2. If the tension pole is less than 0.6 mm to the right of the supply impedance roller's center, shift the tension band control bracket ① in the direction of arrow → ④, and tighten the screw ③.

Notes:

1. After the adjustment, apply glyptal on the screw.
2. If the screw is tightened beyond its limit (5kg. cm), its effect becomes nil (be careful not to over tighten). Use the specified torque drive (JIGTD1200).

ADJUSTMENT OF RECORD/PLAYBACK BACK TENSION

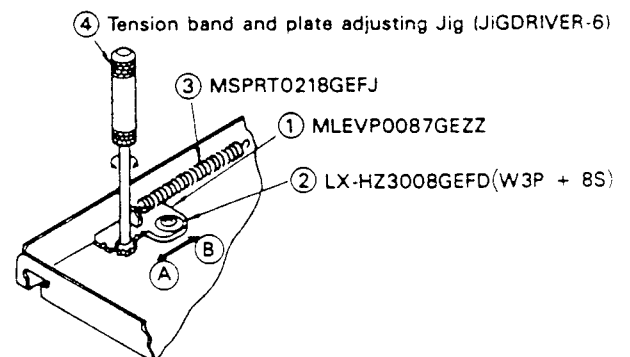
(1) When using a torque meter cassette.

• Checking

1. Remove the cassette housing.
2. Put a back tension torque meter cassette tape into the unit.
3. Push the record button to place the unit in the record mode. Check that the reading of the cassette tape's pointer is 50 to 58 g.cm.
4. Make sure the video cassette tape is wound over the retaining guide.
5. Make sure that the tape is not slack nor damaged at either end.

• Adjustment

1. If the tape tension is less than the specified value move the tension adjust plate by tension band and plate adjusting jig ④ in the direction of arrow → ⑤ in Fig. 1-13, and tighten the screw ③.
2. If the tape tension exceeds the specified value move the tension adjust plate by tension band and plate adjusting jig ④ in the direction of arrow → ⑥ in Fig. 1-13, and tighten the screw ③.



{ Toward ⑤ if lower than specified value
Toward ⑥ if higher than specified value

Figure 1-13.

Note:

Be careful not to tighten the screw too much, because to do so will damage the screw threads of the chassis. Be sure to use the specified jig (JiGDRIVER-6).

CHECKING THE BRAKE TORQUE

A) Checking the brake torque at the supply side.

- **Checking**
 1. Remove the cassette housing assembly.
 2. Check that the mechanism is in the stop mode.
 3. Separate the reel idler from the supply reel disk and place the torque gauge on the supply reel disk.
 4. Slowly rotate the torque gauge in the clockwise (CW) direction so that the reel disk and the gauge needle rotate at the same speed. Repeat for the counterclockwise (CCW) direction of the supply brake. Check that the values are within the specified ranges (CW direction = 280 to 720 g.cm, CCW direction = 110 to 230 g.cm) and that the brake torque in the CW direction is at least twice as high as the brake torque in the CCW direction at the take-up reel disk.

- **Adjustment**

1. If the supply brake torque is outside the specified ranges (CW direction = 280 to 720 g.cm, CCW direction = 110 to 230 g.cm), clean the supply reel disk, and then recheck.
2. If the supply brake torque is still outside the specified range, replace the main brake spring, and then recheck.

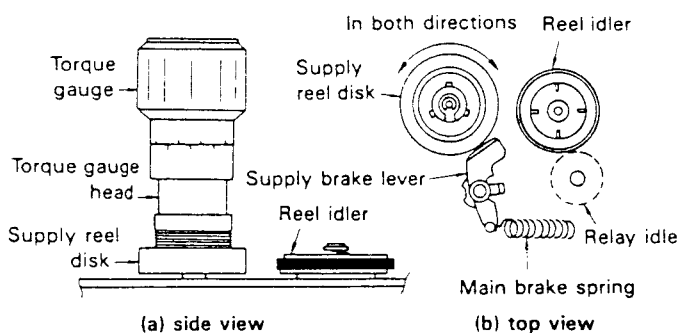


Figure 1-14.

B) Checking the brake torque at the take-up side.

- **Checking**
 1. Remove the cassette housing assembly.
 2. Check that the mechanism is in the stop mode.
 3. Separate the reel idler from the take-up reel disk and place the torque gauge on the take-up reel disk.
 4. Slowly rotate the torque gauge in the CW direction so that the reel disk and the gauge needle rotate at the same speed. Repeat for the CCW direction of the take-up brake. Check that the values are within the specified ranges (CW direction = 280 to 720 g.cm, CCW direction = 110 to 230 g.cm) and that the brake torque in the CW direction is at least twice as high as the brake torque in the CCW direction at the supply reel disk.

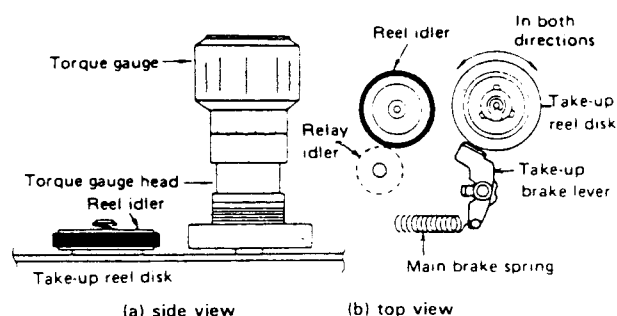


Figure 1-15.

- **Adjustment**

1. If the take-up brake torque is outside the specified ranges (CW direction = 280 to 720 g.cm, CCW direction = 110 to 230 g.cm), clean the take-up reel disk, and then recheck.
2. If the take-up brake torque is still outside the specified range, replace the main brake spring, and then recheck.

REPLACEMENT OF A/C (Audio Control) HEAD

Note:

After replacement, check for smooth tape movement. Under all circumstances avoid touching the head (indicated by "→" in Fig. 1-17(c)).

- **Replacement (See Figs. 1-16 and 1-17)**

1. Unsolder the leads attached to the A/C head PWB and remove them from the PWB.
2. Loosen the tilt adjusting screw ② by using a phillips screwdriver.
3. Remove the azimuth adjusting screw ⑤ (3P + 8S) with a phillips screwdriver.
4. Remove the A/C head screw ④ with a phillips screwdriver, paying attention to the spring ⑦ between the A/C head screw ④ and A/C head assembly ①.
5. Remove the connector soldered to the A/C head PWB, and solder the connector onto the new A/C head PWB.
6. The A/C head assembly ① is attached so that the A/C head arm and A/C head plate stand are roughly parallel to one another.
7. Set the A/C head tilt according to Fig. 1-19.
8. Play an alignment tape and roughly adjust the height of the A/C head, by eye, by turning the A/C head adjusting hexagon nut with the special nut driver until the tape comes to the position shown below. (See Fig. 1-16.)

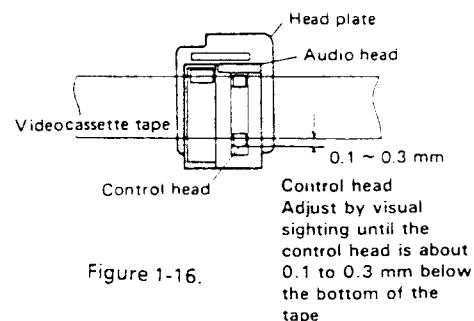
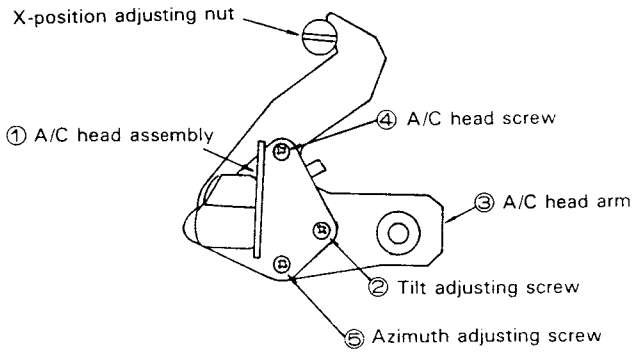
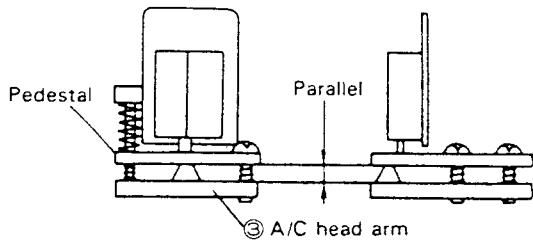


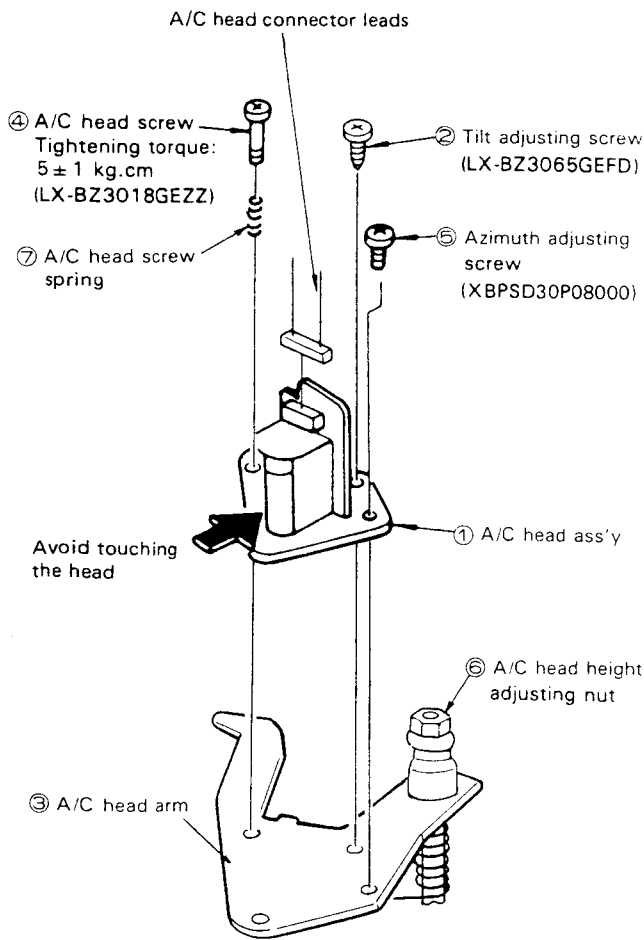
Figure 1-16.



(a)



(b)



(c)

Figure 1-17.

9. Set the mechanism to the unloading mode. Place the A/C head tilt adjusting jig on the main chassis as shown in Figs. 1-18 and 1-19. Slowly turn the set screw with a hex wrench (1.5 mm JIGHW0015) until there is no gap between the jig and the A/C head.

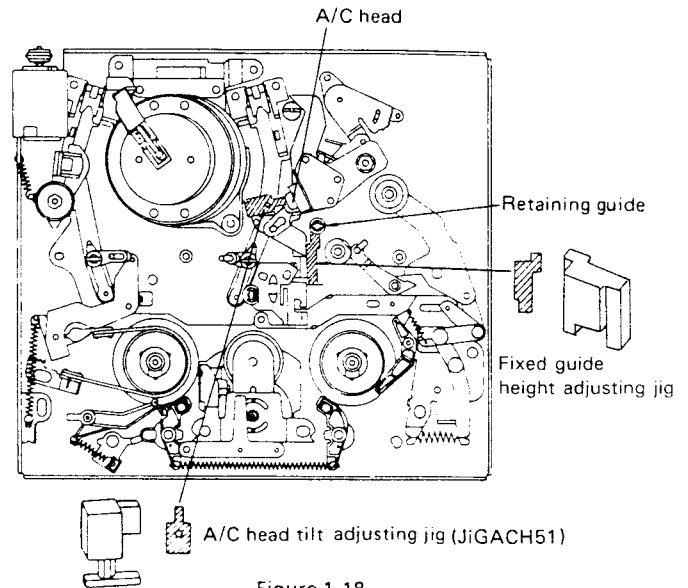


Figure 1-18.

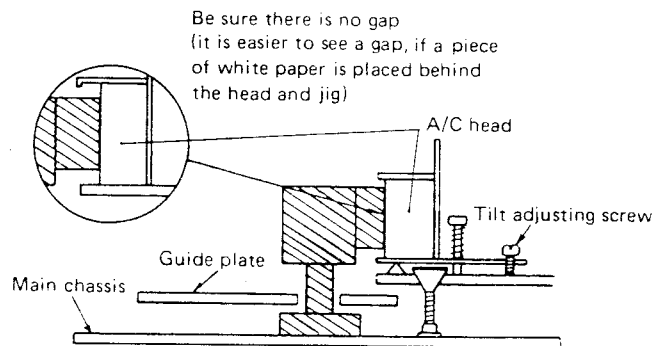


Figure 1-19.

10. When A/C head replacement has been completed, adjust the tape drive train.

ADJUSTMENT OF TAPE DRIVE TRAIN

This includes rough adjustment using an alignment tape and adjustment of retaining guide height, reverse guide height, A/C head height, azimuth, and X-position of guide roller.

- Remove the cassette housing
- 1. Check and adjust the lateral and vertical position of the tension pole and the back tension.

2. Set the angle of tilt for the A/C head as shown in Fig. 1-19.

Note:

The angle of tilt must be adjusted in the same manner as when the head was replaced, even when the A/C head is adjusted.

3. When the above adjustments have been completed, roughly adjust the tape drive train using an alignment tape.

- a. Connect the oscilloscope to the test points for PB chroma output (TP201), head switching pulse (TP202), and GND (TP203). Allow the PB CHROMA signal to be triggered by the head switching pulse of TP202 (See Fig. 2-10).

- b. Loosen the setscrew of the guide roller, and tighten it loosely by using a guide roller adjusting screwdriver (JiGDRIVERH-4) to such an extent so that the guide roller turns smoothly.

- c. Set the alignment tape (VROCPSV) on the reel disk.

Note:

Attach a 400 to 650 g. weight to the cassette tape when a cassette tape is placed on the reel disk with the cassette housing removed.

- d. Set the unit to the playback mode.

- e. Observe the waveforms of the PB chroma, and adjust the tracking knob for a flat PB chroma.

This adjustment is satisfactory if a flat response is obtained on the RF output when the tracking knob is rotated. If a flat response cannot be obtained, roughly adjust the guide roller using an alignment tape until the PB chroma output is flat. Adjust the X-position adjusting nut so that the PB CHROMA envelope becomes almost maximum in the tracking center. In the case of rough adjustment, pay particular attention to the outlet side (See Fig. 1-20).

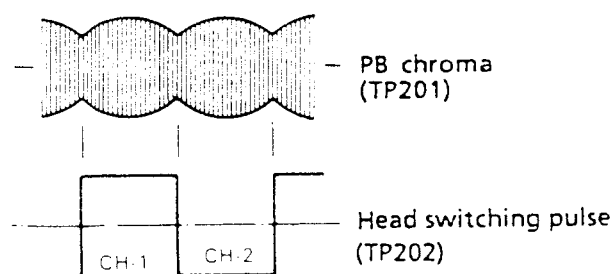


Figure 1-20.

4. The A/C head height and azimuth are adjusted after the roughly adjust the tape drive has been set.

- a. Use the alignment tape to playback its audio 7kHz signal (staircase-like waveform for video signal) and observe the audio output on an oscilloscope.

- b. Adjust the azimuth adjusting screw ⑤ (3P + 8S) so as to obtain maximum audio output.

- c. Slowly rotate the A/C head height adjusting nut ③ with the special box driver so as to obtain the maximum audio output level.

- d. Adjust the azimuth adjusting screw ⑤ (3P + 8S) so as to obtain maximum audio output level.

After this adjustment, apply glytal to the screws and nuts.

5. The final adjustments of tape drive train and X-position are adjusted after adjustment of the A/C head has been completed.

- a. Connect the oscilloscope to the test points for PB chroma output (TP201), head switching pulse (TP-202), and GND (TP203). Allow the PB CHROMA signal to be triggered by the head switching pulse of TP202.

- b. Play the tape drive train alignment tape (VROCPSV).

- c. Finely adjust the guide roller's height so that the envelope is as flat as possible.

Rotate the tracking knob in both directions while adjusting the guide roller, in order to obtain an envelope waveform which is as flat as possible. If the tape is above or below the helical tape position, the PB chroma waveforms will take the shape shown in Fig. 1-21.

Adjust for maximum flatness of the envelope according to the figure.

Note:

Adjustment is made for CH-1 of switching point (low level). The broken lines indicate the envelope waveform when the tape play is extreme.

After adjustment, tighten the setscrew of the guide roller firmly.

Playback tape an alignment (VROCPSV) again in the unloading mode, and make sure that there is no change in the PB chroma output.

- d. The X-Position is adjusted after tape drive train. Set the tracking knob to the "preset" position, rotate the X-position adjusting nut shown in Fig. 1-22. with the special bladed screwdriver for maximum switching pulse low side envelope, and then adjust the A/C head position. Adjust the head switching point to $6.5 \pm 0.5H$ after adjustment of the X-position.

Check the flatness of envelope and sound by self-recording.

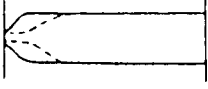
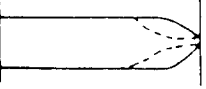


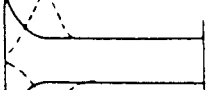
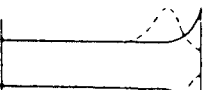


	Tape too high		Tape too low	
	Supply side	Take-up side	Supply side	Take-up side
				
				
Adjustment	Supply side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope	Take-up side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope	Supply side guide roller rotated in counterclockwise direction (raises guide roller) to give the tape some play. The supply side guide roller is then rotated in the clockwise direction to flatten the envelope	Take-up side guide roller rotated in counterclockwise direction (raises guide roller) to give the tape some play. The take-up side guide roller is then rotated in the clockwise direction to flatten the envelope

Figure 1-21.

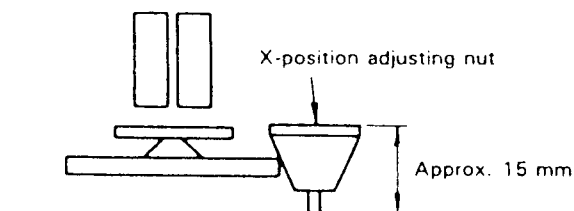


Figure 1-22.

HALF LOADING POST POSITIONING

Notes:

1. The half loading post requires repositioning in the following occasions.
 - 1) When the A/C head has been removed or replaced.
 - 2) When the A/C head height, head azimuth or X-position has been readjusted.
 - 3) When the half loading-related parts (half load cam, cam lever, half load shifter, intermediate lever, coupling plate, half load lever and half load lever spring) have been removed or replaced.
 - 4) When the mechanical control unit has been removed or replaced.
2. The half loading post should be checked and repositioned, if necessary, before bringing the machine in the playback mode, in any of the following occasions. Replacement of the A/C head (the A/C head height, head azimuth, and tilt must be finely adjusted, and the X-position adjusting nut height roughly adjusted, in this case), replacement of the half loading-related parts, and replacement of the mechanical control unit.
3. When the A/C head has been replaced, make the X-position adjustment first and then check the half loading post position. Readjust the position as required.

● Procedure:

1. Remove the cassette housing

Note: This adjustment can also be made without removing the cassette housing. But be sure to disconnect the connector off the right side of the housing.

2. Make sure the machine is in the stop mode.
3. Keep the intermediate lever screw (XBPSD26P05J50) tight with a tightening torque of about 1 kg-cm. Now turn the intermediate lever in the direction of arrow A, using the geared driver (JIGDRIVER-6).
4. Turn the intermediate lever in the direction of arrow B. Apply a torque driver to the half loading post, and tighten up the intermediate lever screw for proper half loading post positioning.

Note: Use the torque driver (JIGTD1200) for this purpose. Set the tightening torque to 5 kg-cm.

5. Set the machine in the eject mode to return the half loading post back. Next set the machine in the stop mode again (to allow the half loading post to come out) to see if the clearance between the half loading post and the A/C head is as specified (0.4-0.7 mm).

6. Actually run the tape to make sure there is no problem with the FF, REW and PB modes.

Note: When the A/C head has been replaced, roughly adjust the half loading post

position (the above steps 1-5). Then adjust the A/C head's X-position and finely adjust the half loading post position (the above steps 1-6).

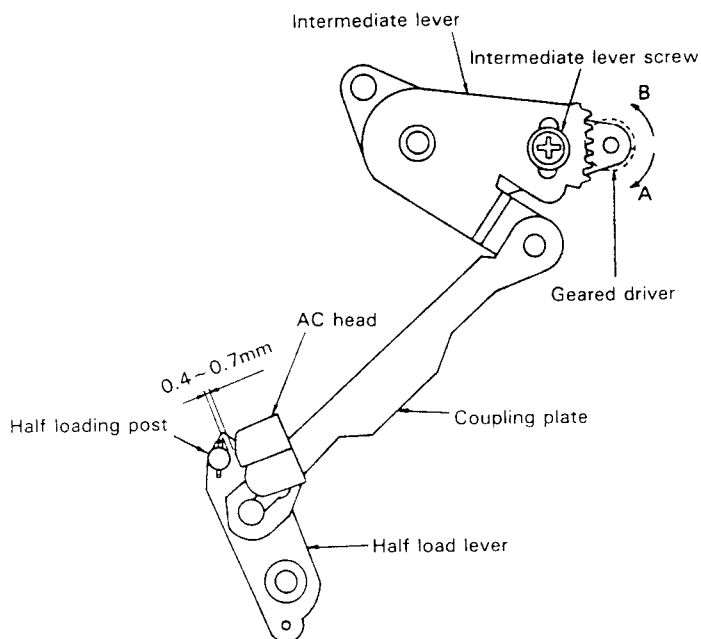


Figure. 1-23

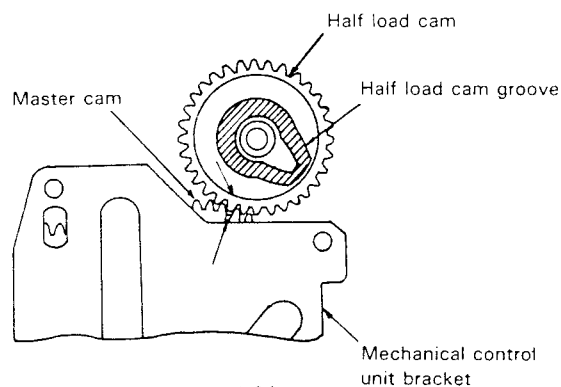


Figure. 1-24.

REPLACEMENT OF UPPER DRUM

Note:

The engagement between the lower drum (outer diameter) and the upper drum (inner diameter) is very accurate, in the order of microns, and care should be paid to their replacement. Even a slight entry of foreign material will affect the accuracy of their reassembly.

- **Replacement (See Fig. 1-25)**

1. Unsolder the leads ① to ④ from the video head and remove them.
2. Remove the two screws ⑤ (brass screws with washers (W3P + 9S) using a phillips screwdriver.
3. Withdraw the upper drum by pulling it up with the upper drum replacement jig. (Refer to Fig. 1-25.)

Notes:

1. Avoid touching the drum surface with bare hands.
2. Do not hit the screws when tightening them.

- **Reassembly**

1. Set the new drum for replacement, as shown in Fig. 1-25, and position the leads properly.

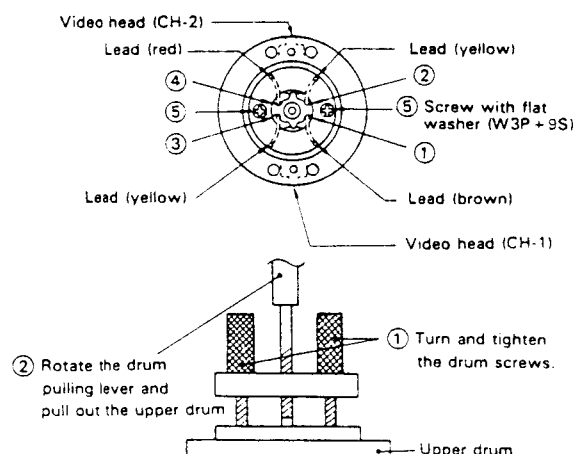


Figure 1-25.

Notes:

1. Before replacing the upper drum, check that there are no scratches or dust on the edge or the outer surface of the lower drum.
2. Before replacing the upper drum, check that there are no scratches or dust on the edge or the inner surface of the upper drum.
3. On assembling these parts, slowly insert the upper drum onto the lower drum with the upmost care, so that the upper drum is not tilted.
4. When assembling these parts, do not allow foreign material to come between them.
5. Do not use excessive force when driving in the screws.
2. Fasten the upper drum in place with the two screws ⑤.
3. Solder the leads from the video head ① to ④ to their respective pads.

Note:

Soldering should be performed quickly and carefully without touching adjacent patterns.

4. After replacement, be sure to check the tape drive train adjustment and the following.

- Adjustment of the playback switching point (See page 22)
- Checking and adjustment of the X-position (See page 15)

REPLACEMENT OF THE MECHANISM CONTROL ASSEMBLY

- **Removal (Fig. 1-26)**

1. Unsolder the cam switch terminal.
2. Remove the cut poly-slider washer ⑧, E-ring ⑨ and cam lever ⑩.
3. Remove the E-ring ①.
4. Remove the three screws ② (LX-HZ3027GEFD).
5. Remove the mechanism control assembly ③.

- **Installation (Fig. 1-26)**

1. Remove the cut poly-slider washer ④.
2. Remove the half load cam ⑤.
3. Adjust the position of the shifter assembly (A) 11 so that the alignment hole ① of the chassis is aligned with the alignment holes of the shifter assembly and brake drive lever 13. (Remove the main brake spring 14 for easier positioning.)
4. Remove the tension arm spring, and fully turn loading gears (A) ⑧ and (B) 10 in the direction indicated by the arrow ⑥, to get the mechanism in the unloading mode.
5. Turn the brake cam ⑥ of the mechanism control assembly in the direction indicated by the arrow until the alignment hole ③ of the segment gear is at the center of the segment alignment hole for the auxiliary angle.
6. Attach the mechanism control assembly ③ to the main chassis. This can be done easily if the shifter assembly (A) 11 is moved to the left and right.
7. Secure the three screws ②.
8. Put the E-ring ① on.
9. Solder the cam switch terminal.
10. Install the half load cam ⑤ (See page 19).

Note:

When installing the half load cam, match the mark "△" (C) of the master cam with the mark "□" (D) of the half load cam.

11. Install the washer ④.
12. Install the cam lever ⑩, cut poly-slider washer ⑧ and E-ring ⑨.

Note:

When installing the cam lever, allow the cam lever pin to go into the half load cam groove.

13. Attach any removed springs such as the main brake spring 14. (See page 3)

Notes:

1. Do not exceed the specified torque when tightening the screws or the threads in the boss may become damaged.
2. After replacement, check the position of the parts, and confirm that the unit operates in all modes.

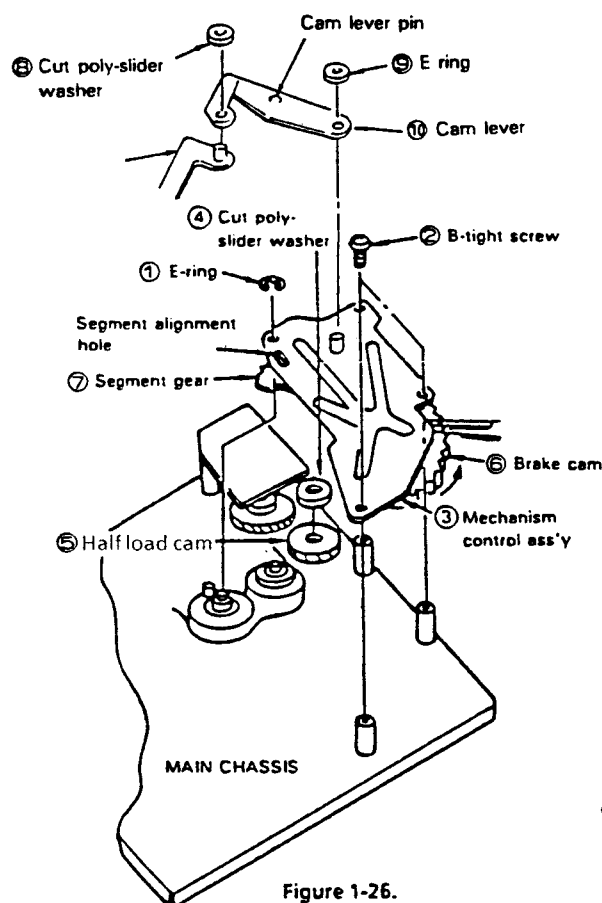


Figure 1-26.

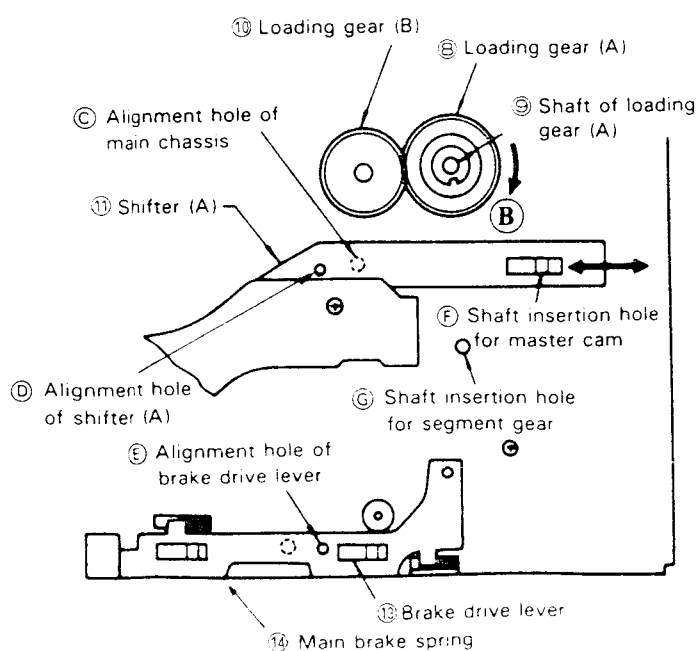


Figure 1-27.

REPLACEMENT OF THE CAM SWITCH**• Removal (Fig. 1-28)**

1. Remove the cut poly-slider washer ① and tension release lever ⑧.
2. Detach the brake cam ② from the mechanism bracket ③.
3. Remove the cam switch ④ while keeping its clips in the arrow directions. (See Fig. 1-28 (B).)

• Installation

1. Put the cam switch ④ to the brake cam ②.
2. Install the assembly of the cam switch ④, brake cam ② and tension release lever ⑧ to the mechanism control bracket ③.

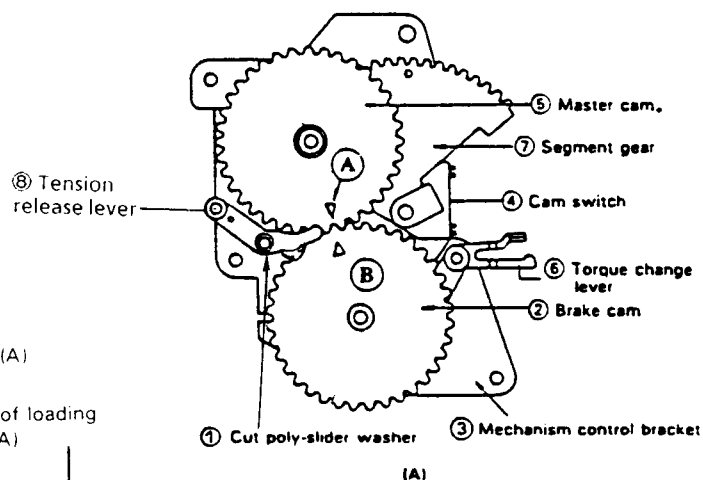
Note:

When attaching to the mechanism control unit, make sure that the alignment mark ① of the master cam is aligned with alignment mark ② of the brake cam, and line up the torque change lever with the groove on the brake cam.

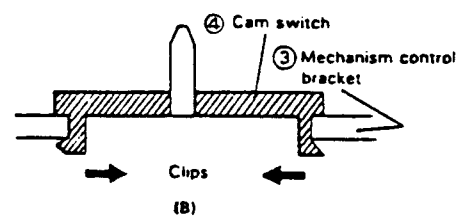
3. Put the cut poly-slider washer ① on.

Notes:

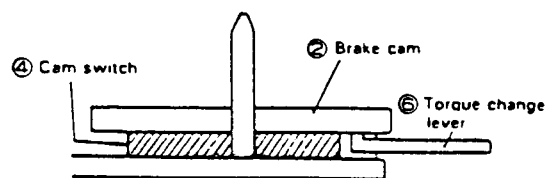
1. After assembly, rotate the brake cam and check that the torque change lever goes into the groove on the cam.
2. When replacing the master cam and brake cam, be sure to apply a light coating of grease to the cam groove.



(A)



(B)



(C)

Figure 1-28.

REPLACEMENT OF THE CAPSTAN D.D. (DIRECT DRIVE) MOTOR

● Removal

1. Remove the lead wire connector ① (flat type) from the capstan D.D. control PWB ⑥. When removing the connector, push down on the board in order to prevent the board from breaking.
2. Remove the screw ③ which holds the capstan D.D. motor control PWB ⑥ on the main chassis. Remove the screw ④ which holds the capstan D.D. motor heat sink panel onto the main chassis.
3. Remove the three screws ② 2.6P + 5.5S (S-cup) (LX-HZ3036GEFD), and remove the capstan D.D. motor 5 from the main chassis.

● Installation

1. Mount the capstan motor on the main chassis while making sure that the capstan shaft does not come into contact, and attach it with the three screws ②.
2. Attach the capstan D.D. motor control PWB ⑥ on the main chassis with the B-tight screw ③. Attach the capstan D.D. motor heat sink panel on the main chassis with the cup-tight screw ④.
3. Insert the lead wire connector ① (flat type) into the capstan D.D. motor control PWB ⑥.

Notes:

1. After installing the capstan D.D. motor, be sure to rotate the capstan motor and check the movement.
2. Check and adjust the servo circuit.
3. Do not exceed the specified torque when tightening the B-tight screws ③ or the threads in the boss may become damaged.

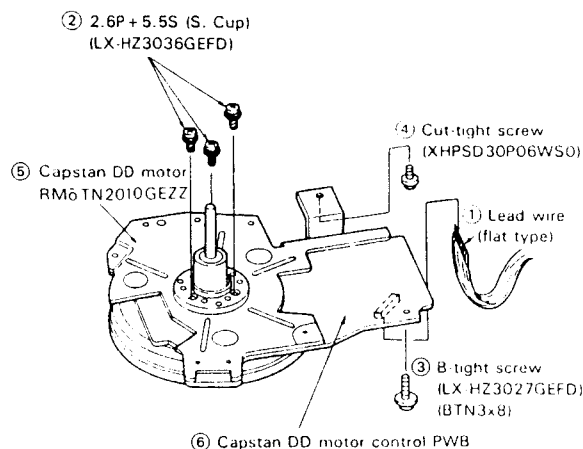


Figure 1-29.

CHECKING THE UNIVERSAL BRAKE LEVER

● Checking

1. Remove the cassette housing.
2. Push the playback button to set the unit to the playback mode.
3. Remove the reel idler from the take-up reel disk, and set the torque gauge (JIGTG0090).
4. Slowly rotate the torque gauge so that the reel disk and torque gauge pointer turn with the equal speed, and check that the set value is as specified (within 40 ± 10 g.cm).

REPLACEMENT OF THE LOADING MOTOR

● Replacement (Fig. 1-30)

1. Remove the four screws (XEBSD40P16000) securing the mechanism chassis to the plastic frame.
2. Disconnect the drum D.D. (direct drive) motor lead connector and the loading motor relay lead NF connector.
3. Remove the loading belt ①.
4. Remove the cup-tight screw ⑥ (XHPSD30P08WS0). Tilt the mechanism chassis for easy removal.
5. Remove the two screw ② (XBPSD30P05J00) and remove the loading motor ④ from the loading motor holder ③.
6. Remove the loading motor PWB ⑤.
7. Replace the loading motor along with the pulley ⑦.

Notes:

1. Check that the space between the motor and the loading motor pulley is 4.5 ± 0.1 mm.
2. After installing the loading motor, be sure to rotate the loading motor and check for smooth movement.

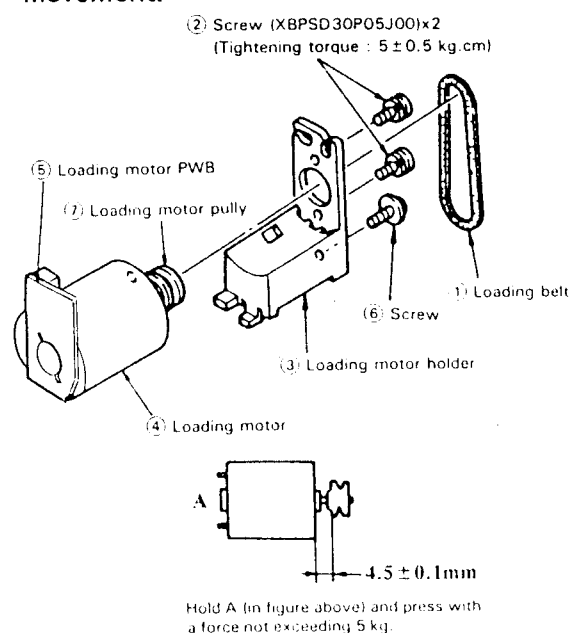


Figure 1-30.

REPLACEMENT OF D.D. (DIRECT DRIVE) MOTOR

• Removal (Fig. 1-31)

1. Remove the two screw ① (SW3P + 5S) which hold the D.D. rotor assembly in place, using a phillips screwdriver.
2. Remove the D.D. rotor assembly by pulling it straight out.
3. Remove the three brass screws ② (2.6P + 14S) which hold the D.D. stator assembly in place, using a phillips screwdriver.
4. Remove the D.D. stator assembly by pulling it straight out.

• Assembly

1. Place the D.D. stator assembly on top of the lower drum.
2. Secure the D.D. stator with the three brass screws ② (2.6P + 14S) using a phillips screwdriver.

Note:

Be careful not to scratch the core, windings, or hall device.

3. Insert the D.D. rotor assembly into the drum shaft.

Note:

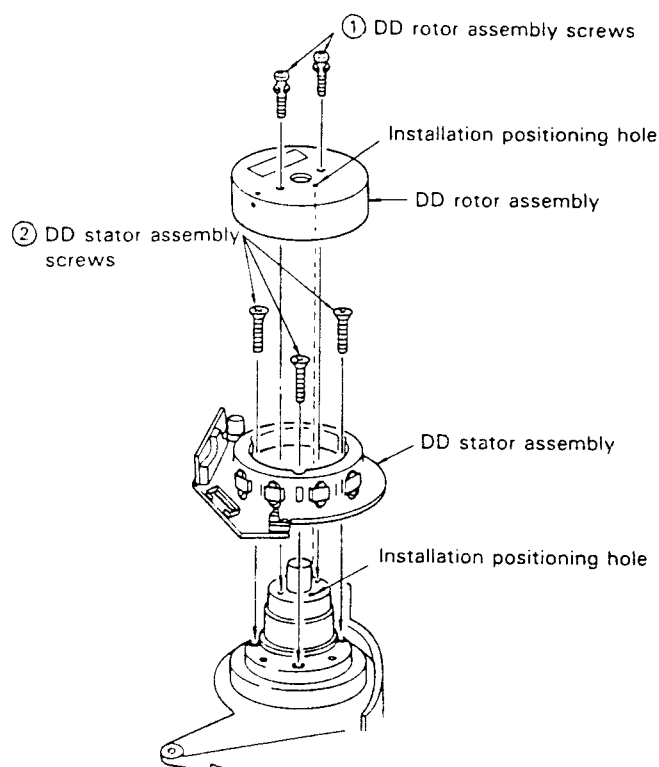
Insert directly into the direction of the shaft. (Refer to Fig. 1-31 for the installation direction.)

4. Secure the D.D. rotor assembly by the screws ①.
5. Secure the D.D. rotor assembly so that the installation positioning holes in the D.D. rotor assembly and lower drum match.

6. After replacement of the D.D. motor as shown above, proceed with the adjustment of the playback switching point.

Notes:

1. Be sure not to damage the upper drum or the video head.
2. Be sure that the hall device is not damaged by the D.D. rotor assembly or other parts.



Note 1: Secure the DD rotor assembly so that the installation positioning holes in the DD rotor assembly and lower drum match.

Figure 1-31.

ADJUSTMENT OF ELECTRICAL CIRCUITRY

Prior to the adjustment:

Most of the electrical adjustments are required after mechanical parts (video head included) have been replaced. Check that all the mechanical functions are normal before attempting adjustment of the electrical circuits.

Electrical adjustments require proper troubleshooting. After repair or parts replacement the following alignments may be required.

Note:

In the table below, instruments, test points and instrument readings are listed in this order.

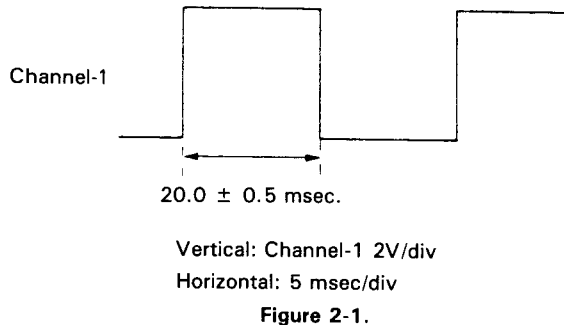
• ADJUSTMENT OF SERVO CIRCUIT

Tracking preset adjustment: R707

Oscilloscope	CH-1: TP701	Shown in Figure 2-1
--------------	-------------	---------------------

(Internal Trigger: CH-1(+) Side)

1. Insert the alignment tape (VROCPSV) into the unit.
2. Playback the tape and set the playback tracking control at the "center click" position.
3. Adjust R707 (preset control) to provide the waveform.



Adjustment of the playback switching point: R720

Oscilloscope	CH-1: TP703 CH-2: video output terminal	Shown in Figure 2-2
--------------	--	---------------------

1. Insert the alignment tape (VROCPSV) into the unit.
2. Using the puls (-) trigger slope of the oscilloscope, adjust R720 (SW POINT) to provide a waveform of 6.5 ± 0.5 H as shown in Fig. 2-2.
3. Disconnect the oscilloscope.
4. Remove the alignment tape.

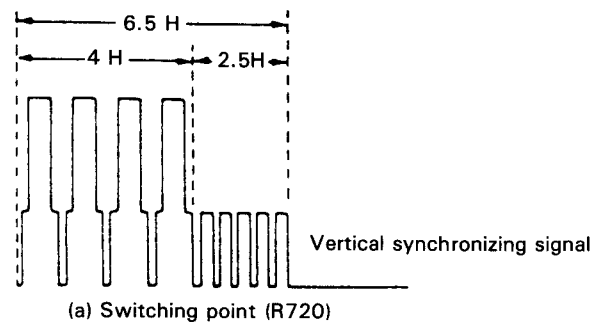


Figure 2-2.

• ADJUSTMENT OF Y/C CIRCUIT

Adjustment of EE level: R253

Note:

Connect a 75 ohm resistor between the video output and ground.

Oscilloscope	Video Output Terminal	Shown in Figure 2-3
--------------	-----------------------	---------------------

(External Trigger: TP2201 on Main PWB.)

1. Put the unit in the record mode.
2. Apply a colour bar signal to the unit.
3. Adjust R253 (EE level control) so that the waveform.
4. Remove the 75 ohm resistor.

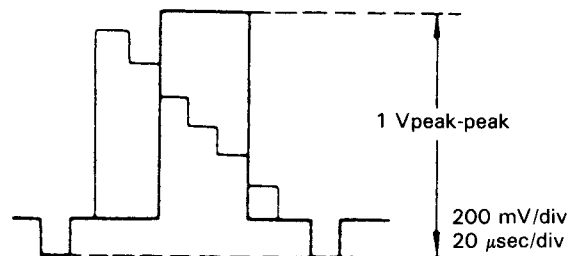


Figure 2-3.

Adjustment of playback video signal level: R209

Note:

Connect a 75 ohm resistor between the video output and ground.

Oscilloscope	Video Output Terminal	Shown in Figure 2-4
--------------	-----------------------	---------------------

(External Trigger: TP2201)

1. Put the unit in the playback mode, an alignment tape (VROCPSV) with a colour bar waveform.
2. Adjust R209 (playback level control) so that the waveform.
3. Remove the 75 ohm resistor.

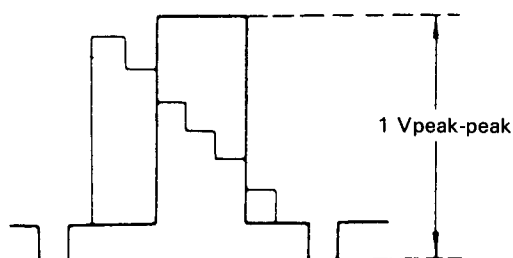


Figure 2-4.

Adjustment of FM 3.8 MHz and 4.8 MHz: R216, R222

1. Turn R229 (white clip control) counter clockwise as far as it will go and release the white clip.
2. Confirm that EE level and PB level are within the specified values.
3. Put the unit in the record mode.
4. Connect a frequency counter to ⑤ Pin of IC201 and adjust R216 (FM carrier) so that the reading becomes 3.8 MHz.
5. Apply a colour bar signal to that unit.
6. Connect the oscilloscope (external trigger: TP2201) to video output (75 Ω terminal). When the auto record and playback level is less than 1.0Vp-p, turn R222 (deviation) counterclockwise; when it is more than 1.0 Vp-p, turn R222 clockwise. Repeat this until the reading becomes 1.00 ± 0.05 Vp-p. (Refer to Fig. 2-3)
7. Unplug the standard colour bar and input a pin plug and short circuit the input. Connect a frequency counter to ⑤ Pin of IC201 and confirm that the reading is 3.8 MHz.
8. White clip controls are released at step 1, so re-adjustment must be performed.

Adjustment of white clip: R229

Oscilloscope	TP201	Shown in Figure 2-5
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1. Put the unit in the record mode.
2. Apply a colour bar signal (stair-case waveform) to the unit.
3. Adjust R229 (white clip control) so that the resultant waveform.

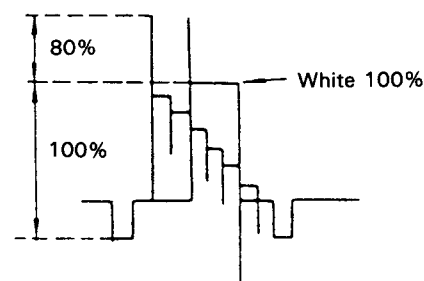


Figure 2-5.

Adjust of FM record circuit: R263, R515

Dual-trace Oscilloscope	GND: TP-32 CH-1 SIG: TP-31 (On the Head Amp PWB)	25 mVp-p (Figure 2-6) 140 mVp-p (Figure 2-7)
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(External Trigger: TP2201/The GND of the external trigger should not be connected to ground.)

1. Put the unit in the record mode.
2. Apply a colour bar signal to the unit.
3. Connect the GND of the dual-trace oscilloscope to TP-32, CH-1 SIG to TP-31.
4. Set R515 (Record FM level control) to "minimum" position.
5. Adjust R515 (record chroma level control) so that the red signal output is 25 mVp-p. (Fig. 2-6).
6. Adjust R263 (record FM) so that the sync tip is 140 mVp-p. (Fig. 2-7)

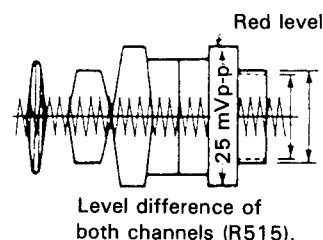


Figure 2-6.

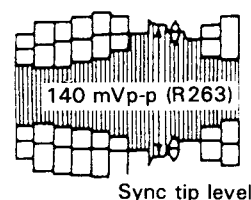


Figure 2-7.

APC Adjustment: R507

Frequency Counter	Y/C PWB Connector 12 pin	4.433619 MHz ± 10 Hz
-------------------	--------------------------	-----------------------------

1. Insert the alignment tape (VROCPSV) into the unit.
2. Adjust R507 so that the frequency 4.433619 MHz ± 10 Hz.

• ADJUSTMENT OF AUDIO CIRCUIT

Adjustment of the playback output level: R609 (on Audio PWB)

VTVM	Audio Output Terminal	- 8 dBm ± 0.5 dBm
------	-----------------------	--------------------------

1. Playback an alignment tape (VROCPSV) with 1 kHz signal, for level calibration.
2. Adjust R609 (playback level control) to attain an output level.

Erase Voltage/oscillator frequency checking

Oscilloscope Frequency Counter	Both Terminals of Full Erase Head	40 Vp-p 70 kHz ± 7 kHz (Figure 2-8)
--------------------------------	-----------------------------------	---

1. Put the unit in the record mode.
2. Make sure the erase voltage is more than 40 Vp-p.
3. Make sure the oscilloscope frequency is 70 kHz ± 7 kHz.

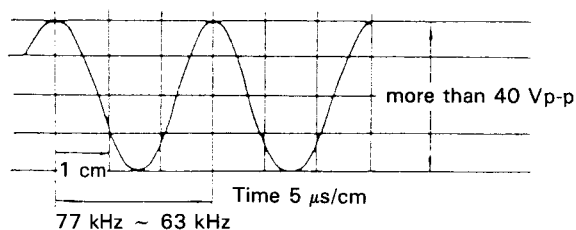


Figure 2-8.

Adjustment of the bias current: R622

VTVM	GND: TP602 SIG: TP601	2.2 mV ± 0.1 mV (220 ± 10 μ A)
------	--------------------------	---

1. Put the unit the record mode.
2. Adjust R622 (bias current control) so that the bias current.

Record level checking

VTVM	Audio Output Terminal	- 3.8 dBm (500mVrms) ± 3 dBm
------	-----------------------	--

1. Apply a 1 kHz, - 3.8 dBm (500mVrms) to the audio input terminal, record it and then play it back.
2. When playing back, see that the audio output.
3. If not - 3.8 dBm (± 3 dBm), repeat the above adjustments.

• ADJUSTMENT OF ON-SCREEN DISPLAY (O.S.D.) CIRCUIT

The ON-SCREEN DISPLAY system is designed to display at a time and confirm program NO., channel, week/day, starting time and length on the TV monitor screen, though they were displayed and confirmed on the fluorescent tube of timer.

Adjustment of colour burst signal

1. Set to OSD mode.
2. Connect the frequency counter to TP2701 (signal) and TP2702 (GND) on the Digital (B) PWB, and adjust the trimmer C5911 (on the main PWB) to obtain 44.3362 MHz ± 20 Hz.

Position (lateral) of program characters

After setting to OSD mode, display the content of the program on the monitor screen, and adjust the trimmer C5904 (on the main PWB) so that the program characters (program No., channel, week/day, starting time and length) are arranged properly on the screen.

Adjustment: Digital (A) K2648HE

1. Either receive an RF broadcast or perform input of Video signals.
2. Press the STROBO key of R/C to set the EE STROBO mode.
3. Connect the oscilloscope to TP2801, then adjust C2804 (Write Clock ADJ) so that the waveform duty becomes 50% (see Fig. 2-9).
Oscilloscope: IV/DEV, 0.5 μ sec/DIV
INT, NORMAL, DC, Slope (-)

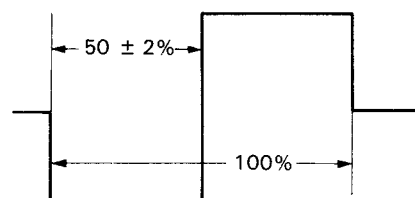


Figure 2-9.

4. Connect the oscilloscope to TP2802, then adjust C2810 (Read Clock ADJ) so that the waveform duty becomes 50% (see Fig. 2-9).

Adjustment: Digital (B)

1. Set CHANNEL to AV (AUX) mode so that nothing is input to the VIDEO IN terminal.
2. Set the COLOR MODE switch to OFF (Blue Mute OFF).
3. Disconnect the "SH" connector.
4. Connect the frequency counter to Pin 4 (4.43 MHz) of connector "SH," then adjust C2609 (OSC ADJ 2) so that the counter value becomes $4433.62 \pm .02$ kHz. Counter GND level is Pin 3 of connector "SH."
5. Connect the frequency counter to TP2701 (4.43MHz) (GND is TP2702), then adjust C2727 (OSC ADJ 1) so that the counter value becomes $4433.62 \pm .02$ kHz.
6. Input PAL colour bar signals into the VIDEO IN terminal.
7. Press the STROBO key of R/C to set the EE STROBO mode.
8. Connect the oscilloscope to Pin 1 (B-Y) of connector "SH" (GND is Pin 3 of "SH").
 - (8-1) Adjust R2631 (Burst Cleaning) until section A shown in Fig. 2-10 is minimized.
 - (8-2) Adjust R2619 (1H GAIN) until the cracking in section B (the dotted line) shown in Fig. 2-10 is minimized.
 - (8-3) Adjust L2601 (1H PHASE) until the cracking in section C shown in Fig. 2-10 is minimized.
 - (8-4) Alternately perform the adjustments in Steps (8-1) to (8-3) two or three times until the waveform indicated by the solid line in Fig. 2-10 is shaped.

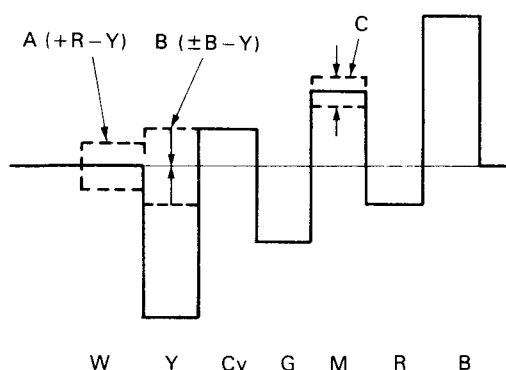


Figure 2-10. B-Y Waveform

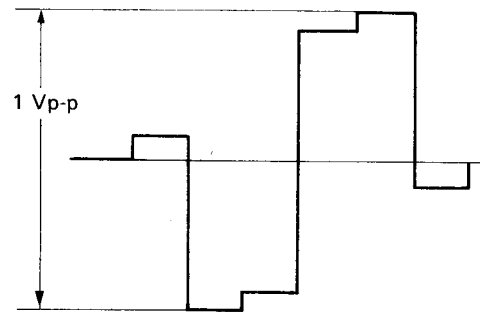


Figure 2-11. R-Y Waveform

9. Connect the oscilloscope to Pin 2 (R-Y) of connector "SH," then adjust R2601 (Colour Level) so that the waveform amplitude becomes 1 Vp-p.
10. Plug in connector "SH."
11. Connect the oscilloscope to video output, then alternately adjust R2709 (R-Y Carry Balance) and R2710 (B-Y Carry Balance) two or three times until the white noise shown in Fig. 2-12 is minimized.

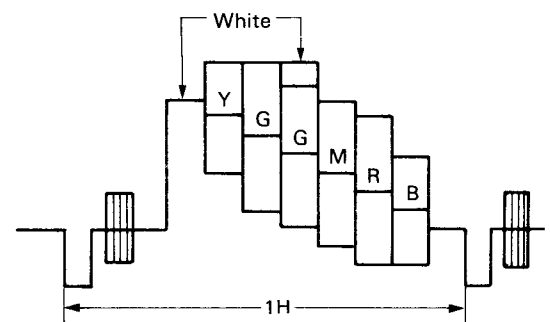


Figure 2-12. Video Output Waveform

• H-S Detection Circuit

PLL frequency adjustment: R1464

1. Connect the frequency counter to the fosc pin of TP1451 after passing through the buffer shown in the figure on the left.
2. As shown in the figure, connect 1μ (50V) between Pin 5 of IC1452 of TP1451 and the GND pin of TP1451. (Remove the connection after completing adjustment.)
3. Adjust R1464 so that the value of the counter display becomes 15.625 kHz.

Within ± 50 Hz

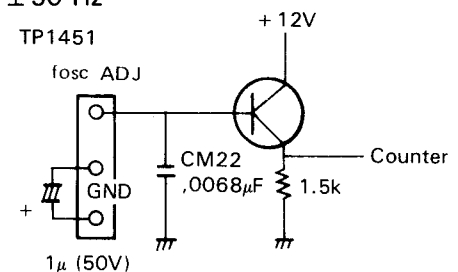


Figure 2-13.

Test Point Layout

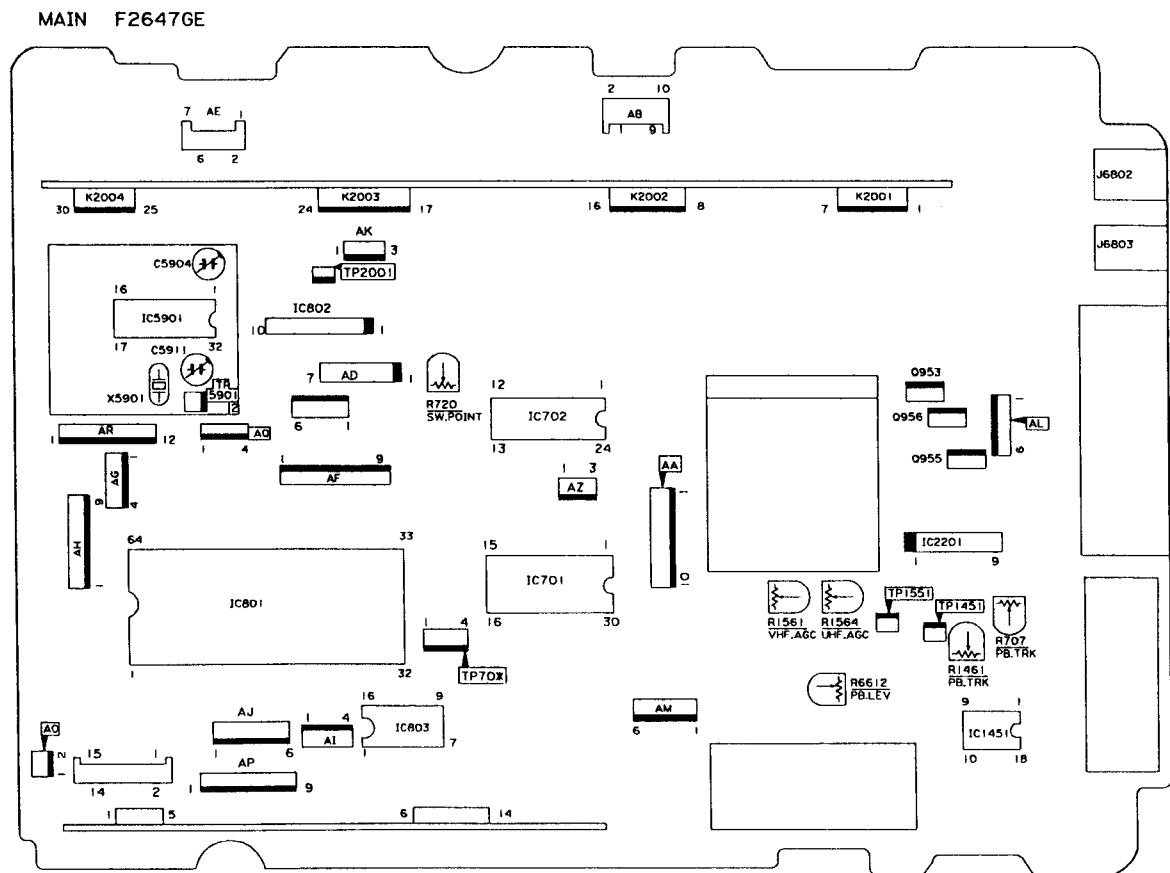


Figure 2-14. Main Circuit

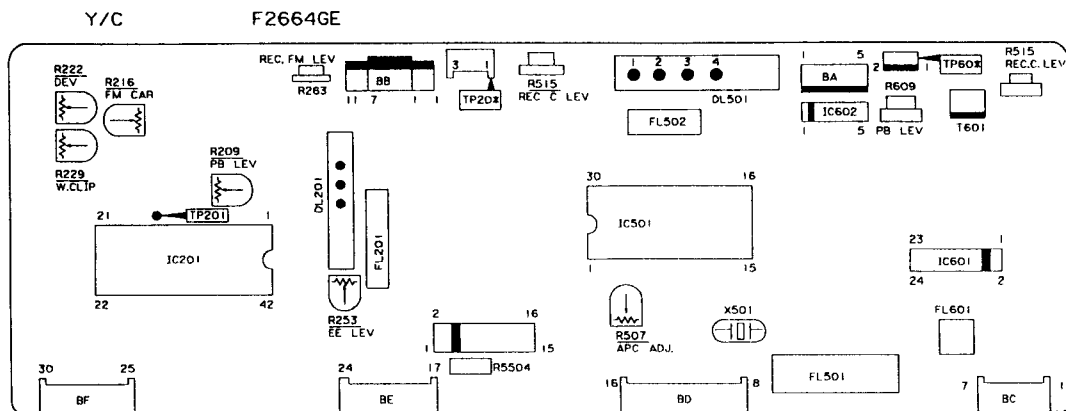


Figure 2-15. Audio, Y/C Circuit

DIGITAL(A) F2648GE

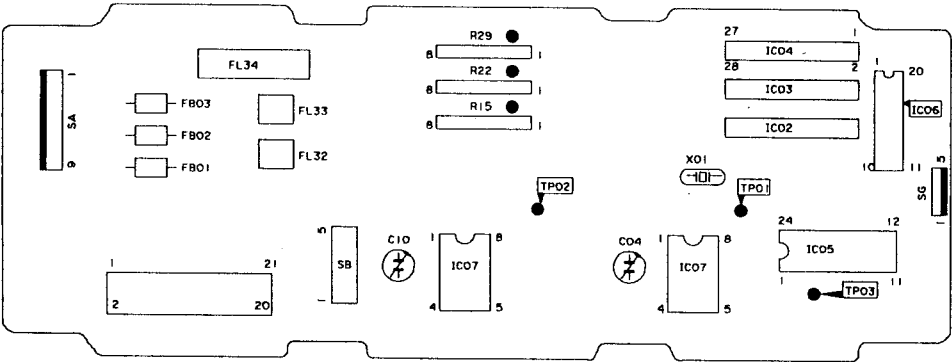


Figure 2-16. Digital (A) Circuit

DIGITAL(B) F2649GE

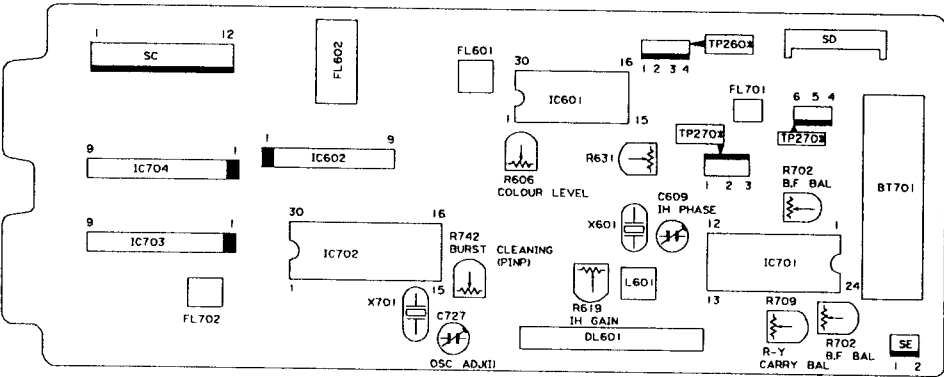


Figure 2-17. Digital (B) Circuit

TROUBLESHOOTING GUIDE

• TROUBLES OF CONTROL SYSTEM (SERVO, SYSTEM CONTROLLER CIRCUIT)

No.	Problems	Probable causes and countermeasures
1.	No power is supplied.	<ul style="list-style-type: none"> • The fuse is blown out; check if there occurs a short-circuit in the internal circuit. • Check if there are produced AT5V, UR (unregulated) 15V and AT9V in the power circuit; if not, this means that the power circuit is defective. • Check if the system controller (IC801) is normally functioning; check if there are produced reset signals at pin ④⑤ of IC801 and clock signal at pins ④⑥ and ④⑦ of IC801. • Check if the power control signal (Low level) goes out of pin ①⑨ of IC801.
2.	No operation is available.	<ul style="list-style-type: none"> • Check if the start sensor signal (cassette housing side) and end sensor signal are applied to pins ④① and ④② of IC801 respectively. • Check if the unit is in timer mode. • Check if the unit is in sensor stop mode. • The cam switch is poorly adjusted for its positioning.
3.	After tape loading, the unit is stopped with the tape kept wound over the drum, or the cassette can't be ejected.	<ul style="list-style-type: none"> • The cam switch is poorly adjusted for its positioning. • IC802 is defective.
4.	The unit will stop immediately after it is set in playback or record mode.	<ul style="list-style-type: none"> • Check if the head switching pulse is applied to pin ③ (for the drum sensor) of IC801. • Check if the drum motor is rotating. • Check if the drum pulse generator's signal is applied to pin ⑦ of the servo circuit IC701.
5.	The unit will stop a few seconds after it has been set in playback or record mode.	<ul style="list-style-type: none"> • Check if the reel pulse is applied to pin ④③ (for the reel sensor) of IC801. • Check if the capstan motor is rotating. • Check if the reel idler is stained or defective.
6.	The tape is not running (the tape is not taken up.)	<ul style="list-style-type: none"> • The reel idler is defective. • The reel brake is defective.
7.	<ul style="list-style-type: none"> • The unit stops sometimes during playback or recording. • The tape can't be taken up when tape unloading. • The tape is scratched when it is wound. • Video search is impossible. 	<ul style="list-style-type: none"> • Check if there are produced capstan motor control signals at the system controller (servo strobe signal at ③⑥ of IC801, servo clock signal ③⑦ of IC801, servo date signal at ③⑧ of IC801, capstan motor pull up signal at pin ②⑧ of IC801, capstan motor unloading signal at pin ②⑨ of IC801, cassette motor control signal at pin ⑥② of IC801, loading motor control signal at pin ⑥③ of IC801, cassette and loading motors reverse control signal at pin ⑧ of IC801). • The video search circuit is defective. • IC701, IC702 and IC803 are defective.
8.	Fine noises appear at the reproduced picture.	<ul style="list-style-type: none"> • The playback phase control is misadjusted (R720). • The tracking preset control is misadjusted (R707).

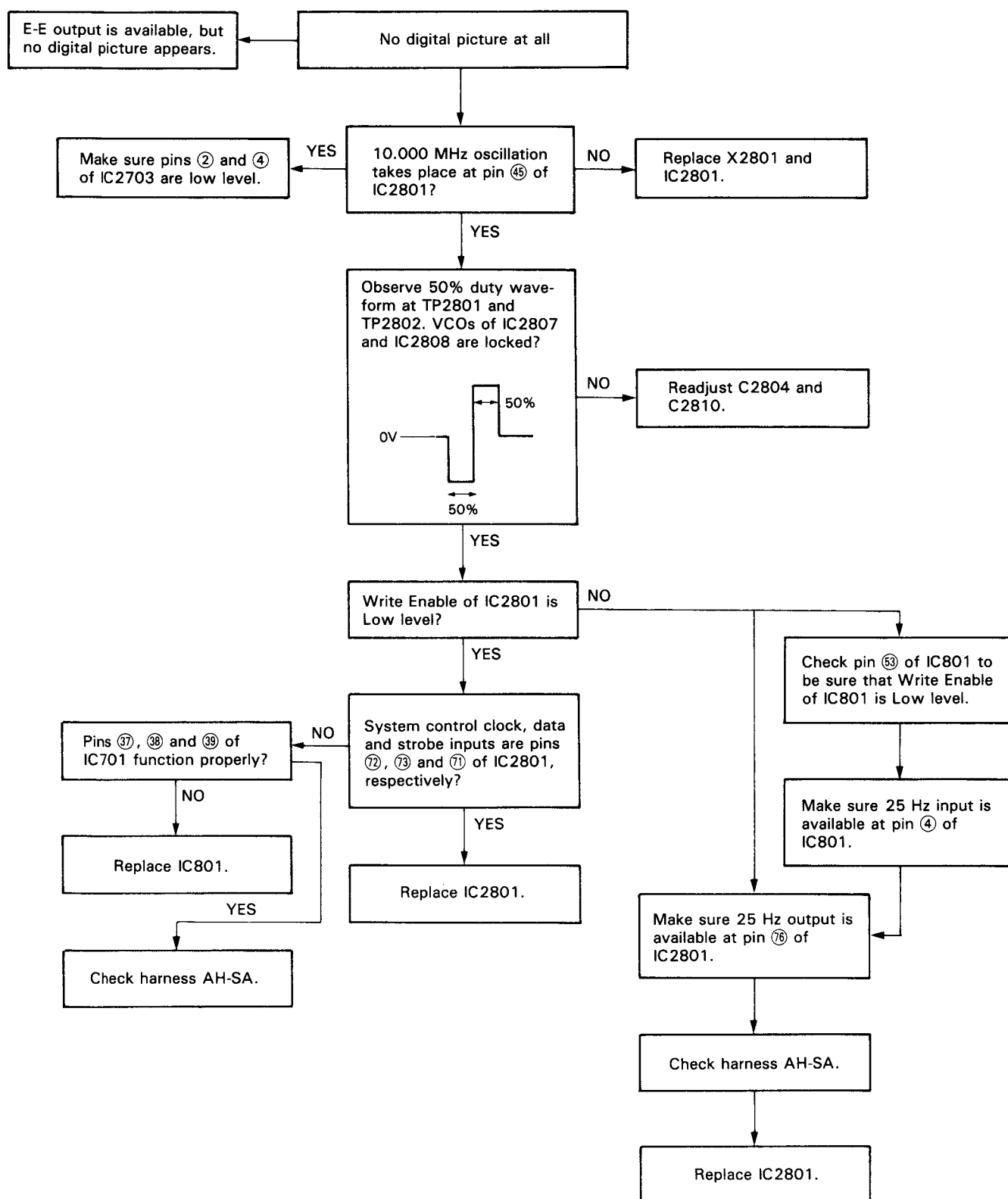
No.	Problems	Probable causes and countermeasures
9.	Noises appear intermittently at the reproduced picture.	<ul style="list-style-type: none"> Check for the capstan servo circuit (capstan frequency generator's signal at pin ⑭ of IC702 and playback control signal at pin ① of IC702).
10.	The picture collapses in the horizontal direction.	<ul style="list-style-type: none"> The drum servo circuit is defective. Check if there are drum frequency generator's signal applied to pin ⑥ of IC701 and drum pulse generator's signal to pin ⑦ of IC701. Check if there is reference signal (4.43 MHz) at pin ① of IC701.

• TROUBLES OF SOUND AND REPRODUCED PICTURE (Y/C AND AUDIO CIRCUIT)

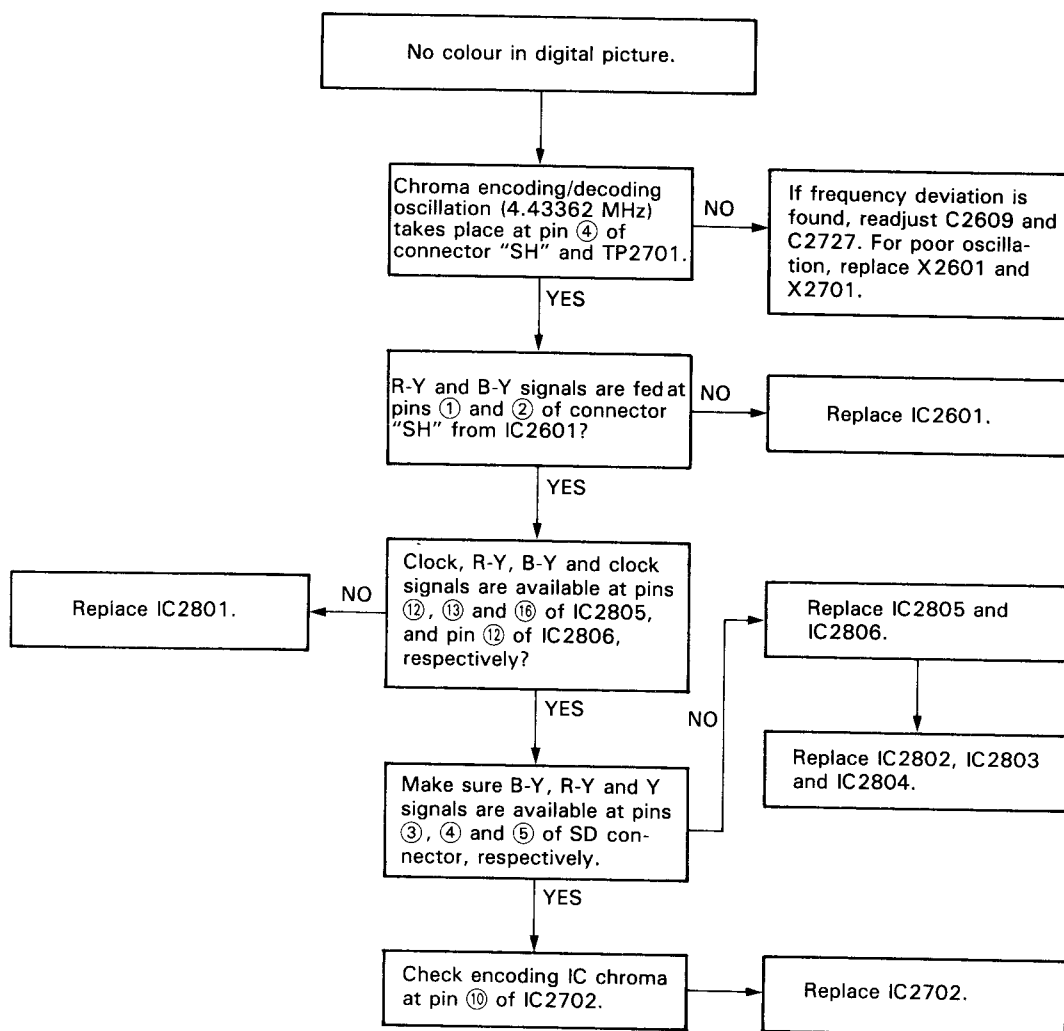
No.	Problems		Probable causes and countermeasures
1.	No picture appears.	At E-E mode	<ul style="list-style-type: none"> Check if the video signal (E-E signal) is applied to pin ② of IC201, if the video signal goes out of pin ⑳, and if proper voltage is applied to each pin of IC201.
		At playback of standard tape.	Make sure that there appears a normal picture at E-E mode. <ul style="list-style-type: none"> Check if the playback FM signal is applied to pin ⑩ of IC201. Check if the playback FM signal is applied to pins ⑲ and ⑳ of IC301.
		At playback of the tape recorded by oneself.	Before this checking, make sure that normal playback is possible with standard tape. <ul style="list-style-type: none"> Check if there is FM signal at pin ① of IC201. Check if there is video signal at pin ③⑨ of IC201. Check if there is video signal at pin ②⑨ of IC201.
2.	No colour appears.		<ul style="list-style-type: none"> Check if there is chroma signal at pin ③⑩ of IC501. APC is misadjusted (R507). It is not allowed to re-adjust them, this means that IC501 is defective. Check if IC501 is normally functioning.
3.	The picture collapses when the tape recorded by oneself is played back. <div data-bbox="391 1525 582 1615" data-label="Image"> </div>		<ul style="list-style-type: none"> Check if there is a normal voltage at each pin of the head amplifier.
4.	Noises appear on the whole of picture when the tape recorded by oneself is played back.		<ul style="list-style-type: none"> Check if there is a normal voltage at each pin of the head amplifier. Clean the video head or replace it a new one.
5.	Noise is noticeable at E-E mode or when the tape recorded by oneself is played back.		<ul style="list-style-type: none"> The tuner and/or RF converter are defective.

No.	Problems	Probable causes and countermeasures
6.	Noises appear on the picture when the tape is played back with standard tape.	<ul style="list-style-type: none"> • Clean the video head or replace it a new one.
7.	There appears no E-E sound.	<ul style="list-style-type: none"> • ALC at IC601 operates improperly. • Check if there is audio signal at pin ⑩ of IC601. • The audio muting circuit is defective.
8.	There appears on sound at playback mode.	<ul style="list-style-type: none"> • The audio head is defective. • Check if playback audio signal is applied to pin ⑦ of IC601 and goes out of pin ⑩.
9.	Sound is distorted.	<ul style="list-style-type: none"> • The audio head is magnetized or defective. • Bias current is insufficient.
10.	There reasonance in the recording or playback is incorrect.	<ul style="list-style-type: none"> • The audio head is magnetized or defective. • Bias oscillator circuit is defective.
11.	Recording is impossible.	<ul style="list-style-type: none"> • Bias oscillator circuit is not normally functioning.
12.	Noise and hum appear frequently during playback or recording.	<ul style="list-style-type: none"> • The audio head is defective.

DIGITAL MEMORY (1) TROUBLESHOOTING

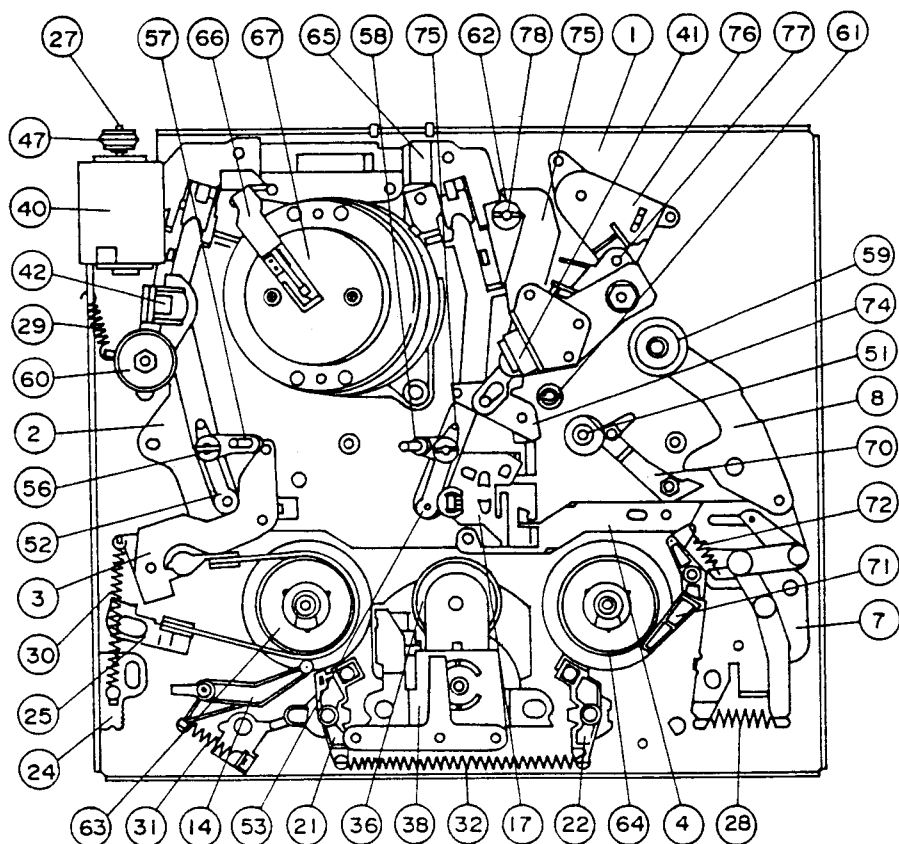


DIGITAL MEMORY (2) TROUBLESHOOTING

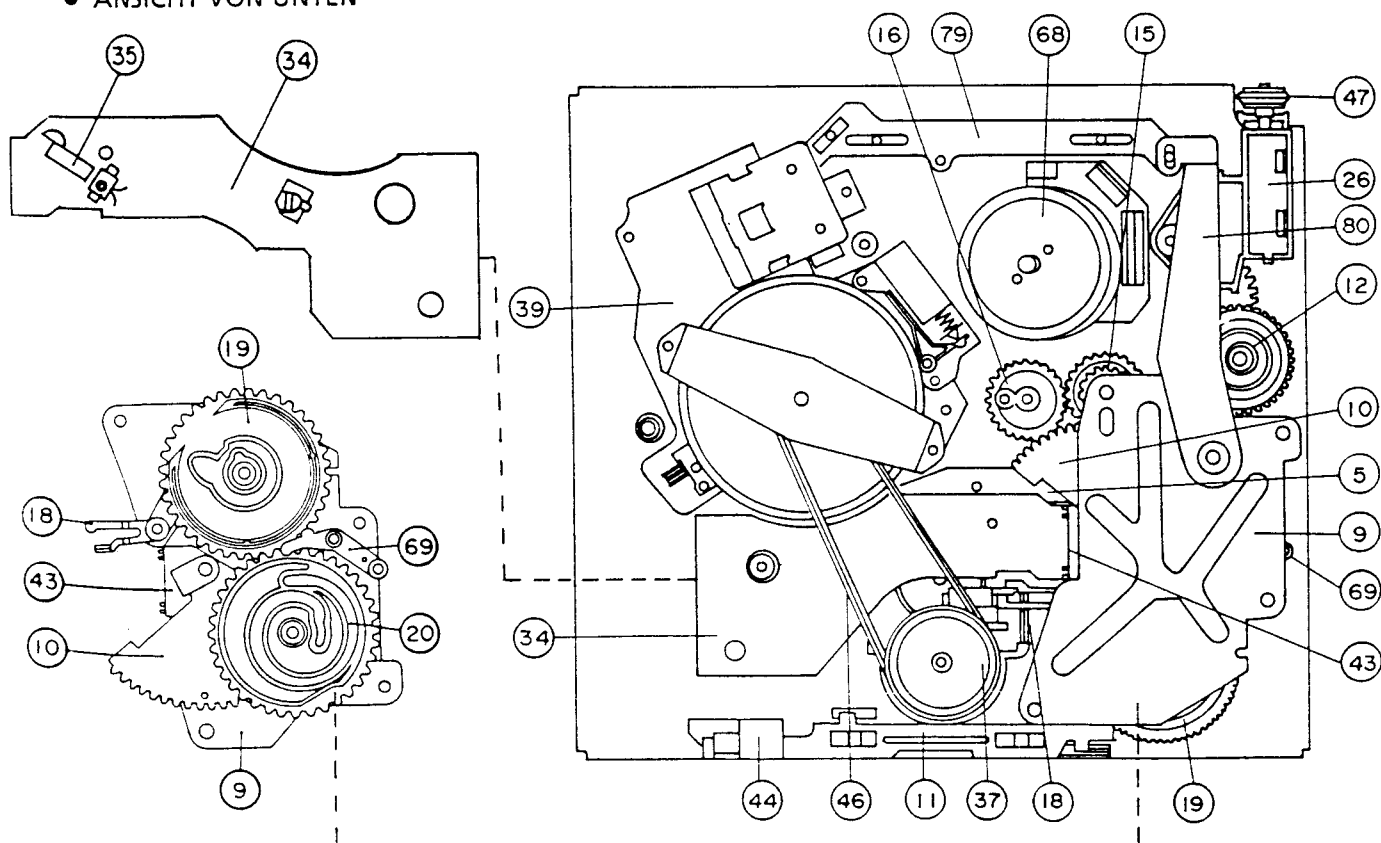


ANORDNUNG DER MECHANISCHEN TEILE

• DRAUFSICHT



• ANSICHT VON UNTEN



BEZEICHNUNG DER MECHANISCHEN TEILE

Nr.	Bezeichnung der Teile	Nr.	Bezeichnung der Teile
1	Hauptchassiseinheit	40	Lademotor
2	Führungsplatteneinheit	41	Ton-/Steuerkopf
3	Spannarmeinheit	42	Volllöschkopf
4	Gleitstückeinheit (B)	43	Nockenshalter
5	Gleitstückeinheit (A)	44	Bremsmagnetspule
7	Andruckrollen-Verbindungsplatteneinheit	46	Spulenriemen
8	Andruckrollenhebel	47	Laderiemen
9	Halterung der mechanischen Steuereinheit	51	Antriebsachse
10	Segmentradeinheit	52	Stabunterteil (A) (Abwickelseite)
11	Bremsantriebshebel	53	Stabunterteil (B) (Abwickelseite)
12	Relaiszahnrad (B)	56	Führungsrolle (Abwickel-/Aufwickelseite)
14	Hilfsbremshebel	57	Abwickelschrägstab
15	Ladezahnrad (A)	58	Aufwickelschrägstab
16	Ladezahnrad (B)	59	Andruckrolle
17	Leuchtdiodenhalter	60	Abwickelwiderstandsrolle
18	Drehmomentumschalthebel	61	Halteführung
19	Bremsnocken	62	X-Positionseinstellmutter
20	Hauptnocken	63	Abwickelspulenscheibe
21	Abwickelbremshebel	64	Aufwickelspulenscheibe
22	Aufwickelbremshebel	65	V-Unterteil
24	Spanneinstellplatte	66	Massebürste
25	Spannbandeinheit	67	Trommel
26	Ladeblock	68	Trommel-Direktantriebsmotor
27	Lademotor-Riemenscheibe	69	Spannfreigabehebel
28	Andruckrollen-Druckfeder	70	Rückwärtsführungseinheit
29	Volllöschkopfarmfeder	71	Universalbremse
30	Spannarmfeder	72	Universalbremsfeder
31	Hilfsbremsfeder	73	_____
32	Hauptbremsfeder	74	Halblasthebel
34	Spulensensor-Leiterplatte	75	Relaisgetriebehebel A
35	Gleitstückschalter	76	Relaisgetriebehebel B
36	Spulenzwischenrad	77	Verbindungshebel
37	Spulenriemenscheibe	78	Audio/Reglerarm
38	Spulenantriebseinheitswinkel	79	Halblast-Versetzer
39	Antriebsachsen-Direktantriebsmotor	80	Nockenhebel-Baugruppe

EINSTELLEN, AUSWECHSELN, ZUSAMMENBAUEN UND FÜR DIE MECHANISCHEN EINSTELLUNGEN ERFORDERLICHE WERKZEUGE



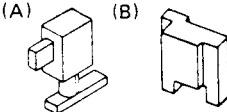



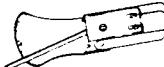
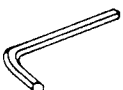

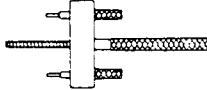



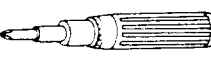
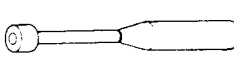
• Überblick

Eine regelmäßige Wartung ist für einen einwandfreien Betrieb erforderlich. In einigen Fällen können Wartungsarbeiten an Ort und Stelle mit gewöhnlichen Werkzeugen ausgeführt werden.

Für umfangreichere Wartungsarbeiten sind jedoch Spezialwerkzeuge und Prüfgeräte erforderlich. Für alle Arbeiten sollten geeignete Werkzeuge verwendet werden.

ZUM EINSTELLEN DER MECHANISCHEN EINHEITEN ERFORDERLICHE WERKZEUGE

Die folgenden Werkzeuge sind für einwandfreie Wartungs- und Reparaturarbeiten erforderlich.

Nr.	Vorrichtung	Teil Nr.	Kode	Aussehen	Bemerkungen
1	Spulenscheibenhöhen-Einstellvorrichtung	JiGRH0002	BR		Diese Vorrichtungen dienen zum Überprüfen und Einstellen der Spulenscheibenhöhe.
2	Hauptschablone	JiGMP0001	BY		
3	Ton-Steuerkopfneigungs-Einstellvorrichtung	JiGACH51B	BU		Diese Vorrichtung dient zur Höheneinstellung des laufenden Bandes am Videokopf.
	Feste Höheneinstellvorrichtung	JiGGH51B	BM		Zur Höheneinstellung der Aufwickelseiten-Halteführung.
4	Drehmomentmesser 90g	JiGTG0090	CH		Diese Vorrichtungen dienen zum Überprüfen und Einstellen des Drehmoments der Auf- und Abwickelpulen.
	Drehmomentmesser 1,2kg	JiGTG1200	CN		
5	Drehmomentmesserkopf	JiGTH0006	AW		
6	Cassetten-Drehmomentmesser	JiGVHT-063	CZ		Dieser Cassetten-Drehmomentmesser dient zum Überprüfen und Einstellen des Drehmoments der Auf- und Abwickelpulen und zum Messen des Bandrückzugs.
7	Spannungsmesser (300g)	JiGSG0300	BF		Diese beiden Spannungsmesser (300g und 2,0kg) werden für Spannungsmessungen verwendet.
	Spannungsmesser (2,0kg)	JiGSG2000	BS		
8	Sechskantstiftschlüssel (0,9mm)	JiGHW0009	AE		Diese Schlüssel dienen zum Lösen oder Anziehen von speziellen Innensechskantschrauben.
	Sechskantstiftschlüssel (1,2mm)	JiGHW0012	AE		
	Sechskantstiftschlüssel (1,5mm)	JiGHW0015	AE		
9	Abgleichband (PAL)	VROCPSV	CK		Dieses Band dient insbesondere zur elektrischen Feineinstellung.
10	Trommel-Auswechsellvorrichtung	JiGDT-0001	BG		Diese Vorrichtung wird zum Auswechseln der oberen Trommel des Videorecorders verwendet.
		or JiGDT-0001CA	AZ		
11	Spannungsmesseradapter	JiGADP003	BK		Dieser Adapter wird für den Spannungsmesser verwendet. Vorrichtung zum Einstellen des Spiels des umlaufenden
12	Spezialschraubenzieher	JiGDRIVERH-4	AP		Dieser Schraubenzieher dient zum Einstellen der Führungsrollenhöhe.
13	Spannband- und Spannplatten-Einstellvorrichtung	JiGDRIVER-6	BM		Diese Vorrichtung dient zum Einstellen des Spannbandes und der Spannplatte.
14	Drehmoment-Schraubenzieher	JiGTD1200	CB		Dieser Schraubenzieher dient zum Messen des Anzugsdrehmoments der Schrauben; 12kg
15	Kastenschraubenzieher zum Einstellen der Ton-/Steuerkopfhöhe	JiGDRIVER110-7	AS		Dieser Schraubenzieher dient zur Höheneinstellung des Ton-/Steuerkopfes.

ZUR BEACHTUNG:

Die jetzige JiGMA0001 enthält die Hauptschablone (JiGMP0001) und Scheibenhöhen-Einstellvorrichtung (JiGRH0001). Obwohl die neue Scheibenhöhen-Einstellvorrichtung (JiGRH0002) für eine größere Höhe vorgesehen ist, kann diese für die jetzige Vorrichtung (JiGRH0001) verwendet werden, aber die jetzige Vorrichtung (JiGRH0001) kann nicht als JiGRH0002 verwendet werden. Die Hauptschablone (JiGMP0001) kann zusammen mit JiGRH0001 und JiGRH0002 verwendet werden.

* * * * *

MECHANISCHE TEILE, DIE REGELMÄSSIG ÜBERPRÜFT WERDEN MÜSSEN

Die folgende Tabelle als Anleitung benutzen, um die mechanischen Teile in gutem Betriebszustand zu halten.

Teile \ Wartungszeitabstände	500 Std.	1000 Std.	1500 Std.	2000 Std.	3000 Std.	Bemerkungen
Führungsrolleneinheit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bei unregelmäßiger Drehung oder starker Vibration auswechseln.
Widerstandsrolle für Abwicklung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Innenseite der Widerstandsrolle für Abwicklung		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	Mit reinem, hochwertigem Isopropylalkohol reinigen.
Flansch B der Widerstandsrolle für Abwicklung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Den Bandkontaktbereich mit der vorgeschriebenen Reinigungsflüssigkeit reinigen.
Halteführung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Führungsflansch B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Schrägstab	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Videokopf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Den Bandkontaktbereich mit der vorgeschriebenen Reinigungsflüssigkeit reinigen.
Vollöschkopf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ton-/Steuerkopf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Antriebsachsenriemen		<input type="checkbox"/>		<input type="checkbox"/>		Die Gummiteile und den Gummikontaktbereich mit der vorgeschriebenen Reinigungsflüssigkeit reinigen.
Andruckrolle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spulenriemen		<input type="checkbox"/>		<input type="checkbox"/>		
Laderiemen		<input type="checkbox"/>		<input type="checkbox"/>		
Antriebsachsenmotor					<input type="checkbox"/>	
Lademotor					<input type="checkbox"/>	
Ab-/Aufwickelspulenscheiben		<input type="checkbox"/> <input type="triangle"/>		<input type="checkbox"/> <input type="triangle"/>		Mit reinem, hochwertigem Isopropylalkohol reinigen.
Spannbandeinheit					<input type="checkbox"/>	
Spulenantriebseinheit					<input type="checkbox"/>	
Spulenzwischenrad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spulenriemenscheibe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ab-/Aufwickelbremshebel				<input type="checkbox"/>		

ZUR BEACHTUNG: ○: Auswechseln des betreffenden Teils

□: Reinigen (Zum Reinigen ein fusselfreies, mit reinem Isopropylalkohol befeuchtetes Tuch verwenden.)

△: Nachfüllen von Öl (Die angegebene Stelle alle 1000 Std. mit hochwertigem Spindelöl geölt werden.)

Bei diesem Modell gibt es keine Einstellwerte für Drehmomente, Spannung usw. Falls ein Meßwert außerhalb des vorgeschriebenen Bereichs liegt, das betreffende Teil reinigen oder auswechseln.

AUSBAUEN, EINSTELLEN UND AUSWECHSELN DER CASSETTENGHÄUSE-STEUEREINHEIT

Anmerkungen:

1. Beim Aus- und Einbauen des Cassettengehäuses darauf achten, daß dieses nicht gegen den sich in der Nähe befindlichen Führungsstift, die Trommel usw. schlägt.
2. Vor dem Aus- oder Einbauen darauf achten, den Netzkabelstecker des Videorecorders aus der Netzsteckdose zu ziehen.

• Ausbauen

1. Das Gerät auf Cassettenauswurf einstellen.
2. Den Steckverbinder von der rechten Seite der Cassettengehäuse-Steuereinheit trennen. (Darauf achten, daß keine Leitungen reißen.)
3. Die beiden Schrauben entfernen, mit denen das Cassettengehäuse befestigt ist.
4. Die Cassettengehäuse-Steuereinheit (Abb. 1-1) in Pfeilrichtung ⇒ Ⓐ schieben und gerade nach oben herausziehen.

• Einbauen

1. Den Steckverbinder an die rechte Seite der Cassettengehäuse-Steuereinheit anschließen.
2. Die Haken der Cassettengehäuse-Steuereinheit in das Laufwerkchassis einhaken, diese in Pfeilrichtung ⇒ Ⓐ schieben und provisorisch befestigen. Nachprüfen, ob sich die Cassettengehäuse-Steuereinheit in der richtigen Lage befindet, dann diese mit den beiden Schrauben (XHPS330P06WS0) befestigen.
3. Die Leitungen des Steckverbinders auf der rechten Seite der Cassettengehäuse-Steuereinheit richtig anordnen.

(XHPS330P06WS0)

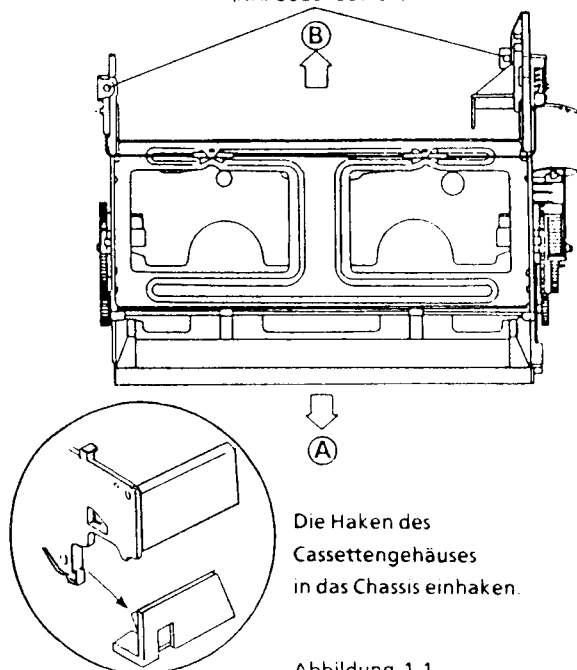


Abbildung 1-1

ZERLEGEN UND ZUSAMMENBAUEN DER SCHNECKENRADEINHEIT

• Zerlegen (Abb. 1-2)

1. Den Steckverbinder ① von der Cassettenrelais-Leiterplatte entfernen.
2. Die beiden Lamellen Ⓐ an der Cassettenrelais-Leiterplatte lösen, und die Cassettenrelais-Leiterplatte vom Rahmen entfernen.
3. Die Schraube ② von der Cassettenmotorhalterung abschrauben, und die Cassettenmotoreinheit zusammen mit der Cassettenrelais-Leiterplatte vom Cassettengehäuserahmen entfernen.
4. Die Schneckenradeinheit ③ herausziehen.

• Zusammenbauen (Abb. 1-2)

1. Die Cassettengleitstückeinheit gegen den Cassettendeckel bewegen.
2. Das Phasenzahnrad ⑤ bis zum Anschlag im Uhrzeigersinn drehen.
3. Nach dem Zusammenbauen der Schneckenradeinheit die Einstellmarke ④ der Schneckenradeinheit auf die Einstellmarke ⑥ des Phasenzahnrads ausrichten. Dann diese in die Rahmenachse einsetzen, wobei darauf zu achten ist, daß der Zapfen ① der Cassettenschlitteneinheit mit der Antriebsarmnut im Eingriff steht. Bei dieser Arbeit kann es vorkommen, daß das Schneckenrad von der Rahmenachse fällt; daher darauf achten, das Schneckenrad mit der Hand festzuhalten.
4. Den Zapfen ⑤ des Zeitsteuerhebels auf die Schneckenradnut ④ ausrichten, und die Schneckenradeinheit mit der Schraube ② befestigen.
5. Den Zapfen ⑥ des Zeitsteuerhebels auf die Nut ⑦ des Cassetten-Betriebsartenschalters ⑥ ausrichten, und die Cassettenrelais-Leiterplatte mit der Lamelle Ⓐ des Rahmens befestigen; dabei nachprüfen, ob die beiden Zapfen ① des Cassetten-Betriebsartenschalters fest in die Cassettenmotorhalterungsnut ① eingreifen.
6. Den Steckverbinder in die Buchse der Cassettenrelais-Leiterplatte stecken.

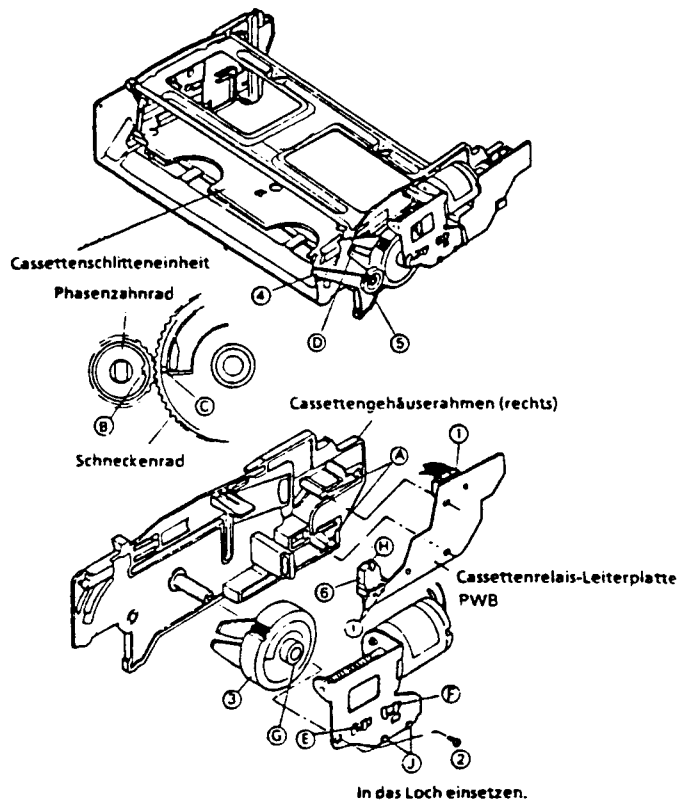


Abbildung 1-2.

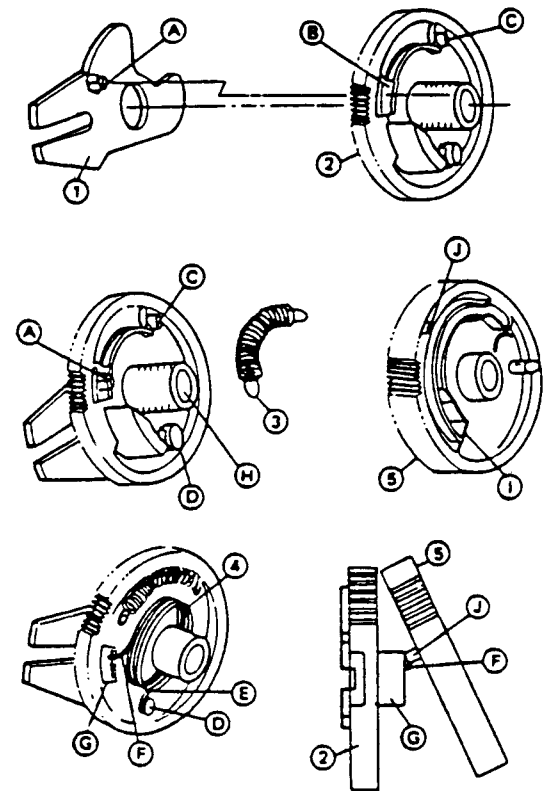


Abbildung 1-3.

• **Zusammenbauen der Schneckerradeinheit (Abb. 1-3)**

1. Den Zapfen ① des Antriebsarms ① in das Loch ② des Antriebszahnrad ② einsetzen.
2. Beide Enden der Antriebsfeder ③ in den Zapfen ① des Antriebsarms bzw. in den Zapfen ③ des Antriebszahnrad einhaken.
3. Ein Ende ④ der Antriebspendelfeder ④ in den Zapfen ⑤ der Antriebszahnradeneinheit einhaken und das andere Ende ⑥ der erwähnten Feder am Zapfen ⑥ des Antriebszahnrad befestigen; dabei das Ende ⑦ der Antriebspendelfeder mit der Hand festhalten.
4. Den Zapfen des Schnecken ⑤ am Zapfen ⑥ des Antriebszahnrad anbringen.
5. Mit Hilfe eines spitz zulaufenden Schraubenziehers das Ende ⑧ der Antriebspendelfeder in den Zapfen ⑨ des Schneckenrad einhaken; sicherstellen, daß beide Enden der Antriebspendelfeder in die jeweiligen Zapfen der Antriebsradeinheit eingehakt sind.
6. Das Antriebszahnrad mit der Hand festhalten und dabei das schneckenrad mit der anderen Hand entgegen dem Uhrzeigersinn drehen. Der Zapfen ③ des Antriebszahnrad greift dann in das Loch ① des Schneckenrad ⑤ ein. (Das Schneckenrad dreht sich nicht rückwärts, sondern es rutscht eher von der Achse ⑧ des Antriebszahnrad. Um dies zu vermeiden, sowohl das Antriebszahnrad als auch das Schneckenrad mit der Hand festhalten.)

AUSWECHSELN DER CASSETTENHEBEL-BAUGRUPPE

• **Demontage (Abb. 1-4)**

1. Die Zwischenringe von den rechten und linken Wellen entfernen.
2. Das Schneckenradgetriebe ① von Hand im Gegenuhrzeigersinn drehen, bis die Cassetten-Gleiter-Baugruppe ② die Bodenposition erreicht.
3. Die linken und rechten Seitenrahmen ③ leicht erweitern, damit die Zungen ④ der Cassetten-Gleiter-Baugruppe ② aus den Öffnungen der rechten und linken Seitenrahmen entfernt werden können.
4. Ohne die Haken zu verbiegen, die Hebelfeder ⑦ von Gleiter ② und Cassettenhebel ⑤ entfernen.
5. Den Zwischenring ④ (1.4W6-0.5) von der Gleiterwelle entfernen.
6. Die Mitte des Cassettenhebels ⑤ drücken, um die Cassettenspitze ⑥ vom Cassettenhebel ⑤ herausschnappen zu lassen. Darauf achten, den Cassettenhebel ⑤ nicht zu verbiegen.

• **Zusammenbau**

Den Zusammenbau in umgekehrter Reihenfolge des Auseinanderbaus vornehmen.

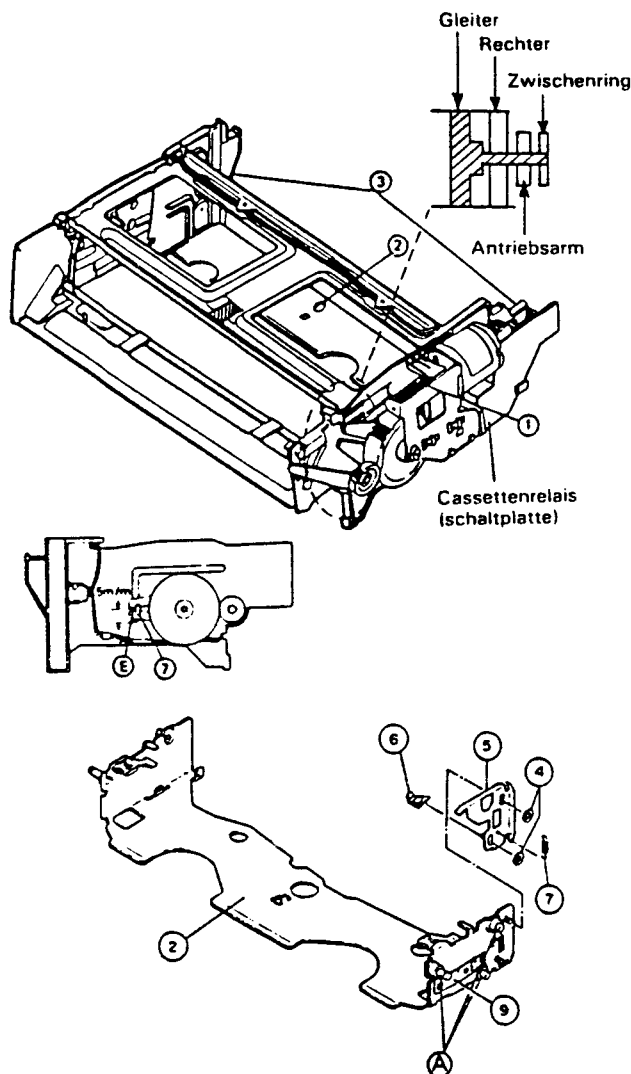


Abbildung 1-4.

BEI BANDLAUF OHNE CASSETTEN-GEHÄUSE-STEUEREINHEIT

1. Die Abdeckung einer Cassette mit der Hand öffnen und mit einem Stück Vinylband offenhalten.
2. Die Cassette in das Bandlaufwerk einsetzen. Dann die Cassette mit einem Gewicht (500g oder weniger) stabilisieren.
Zur Beachtung:
Das Gewicht sollte nicht schwerer als 500g sein.

AUSBAUEN UND HÖHENEINSTELLUNG DER SPULENSCHLEIBEN

- Ausbauen der Abwickelspulenscheibe:
 1. Das Spannband ⑥ und den Spannarm ② entfernen.
 2. Die Schlitzunterlagscheibe ① entfernen.
 3. Die Abwickelspulenscheibe ③ nach oben ziehen und auswechseln.
 - * Dabei die Höheneinstell-Unterlagscheibe ⑤ entfernen und reinigen.
- Ausbauen der Aufwickelspulenscheibe:
 1. Die Schlitzunterlagscheibe ① entfernen.
 2. Die Aufwickelspulenscheibe ④ nach oben ziehen und auswechseln.
 - * Dabei die Höheneinstell-Unterlagscheibe ⑤ entfernen und reinigen.

Anmerkungen:

1. Nach Auswechseln einer der Spulenscheiben darauf achten, die Höheneinstellung vorzunehmen.
2. Darauf achten, das Spannband nicht zu beschädigen.
3. Unbedingt darauf achten, den Hilfsbremshebel, Ab- und Aufwickelbremshebel sowie den Universalbremshebel nicht zu verformen. (Siehe Seite 33, Teile 14, 21, 22 und 71.)
4. Die Spannstabposition überprüfen. (Siehe Seiten 42 und 43.)
- Auswechseln der Abwickelspulenscheibe:
 1. Die Spulenscheibenachse reinigen, und die Höheneinstell-Unterlagscheibe ⑤ anbringen.
 2. Die neue Abwickelspulenscheibe auf die Achse setzen.
 3. Die Spulenscheibenhöhe mit Hilfe der Hauptschablone und Spulenscheibenhöhen-Einstellvorrichtung einstellen.
 4. Die neue Abwickelspulenscheibe abnehmen, Öl (hochwertiges Spindelöl) auf die Spulenscheibenachse auftragen, dann die Scheibe wieder auf die Achse setzen.
 5. Die Schlitzunterlagscheibe ① wieder anbringen.
 6. Den Spannarm ② und das Spannband ⑥ wieder anbringen.

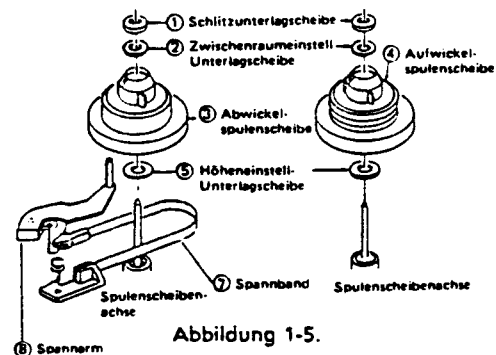


Abbildung 1-5.

- Auswechseln der Aufwickelspulenscheibe:
 1. Die Scheibenachse reinigen, und die Höheneinstell-Unterlagscheibe ⑤ anbringen.
 2. Die neue Aufwickelspulenscheibe auf die Achse setzen.
 3. Die Spulenscheibenhöhe mit Hilfe der Hauptschablone und Spulenscheibenhöhen-Einstellvorrichtung einstellen.
 4. Die neue Spulenscheibe abnehmen, Öl (hochwertiges Spindelöl) auf die Spulenscheibenachse auftragen, dann die Scheibe wieder auf die Achse setzen.
 5. Die Schlitzunterlagscheibe ① wieder anbringen.

Anmerkungen:

1. Darauf achten, die Oberfläche der Spulenscheibenachse nicht mit den Werkzeugen zu kratzen.
2. Nach dem Auswechseln den Rückzug in der Bildsuchlauf-Betriebsart (siehe Seite 41) und das Bremsdrehmoment (siehe Seite 43) überprüfen.

HÖHENEINSTELLUNG

1. Das Cassettengehäuse entfernen, und die Hauptschablone gemäß Abb. 1-6(a) auf das Laufwerk setzen, wobei darauf zu achten ist, daß diese nicht gegen die Trommel schlägt.
2. Mit Hilfe der Spulenscheibenhöhen-Einstellvorrichtung sicherstellen, daß die Spulenscheibe niedriger als der Teil A aber höher als der Teil B der Abb. 1-6 (b) ist. Wenn die Höhe nicht richtig ist, die Höheneinstell-Unterlagscheiben verwenden. Das Axialdruckspiel der Achse sollte 0,1 bis 0,8mm betragen.

Zur Beachtung:

Bei jedem Auswechseln der Spulenscheibe die Höheneinstellung vornehmen.

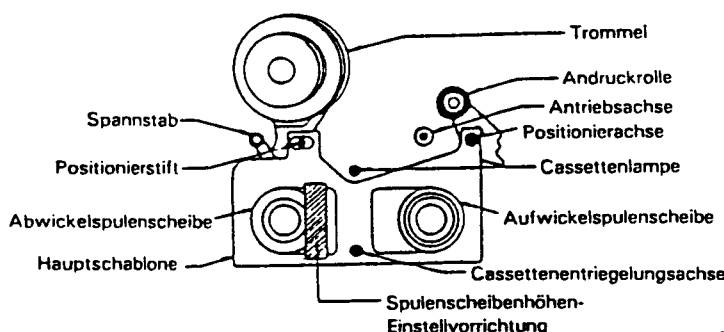


Abbildung 1-6.(a) Draufsicht

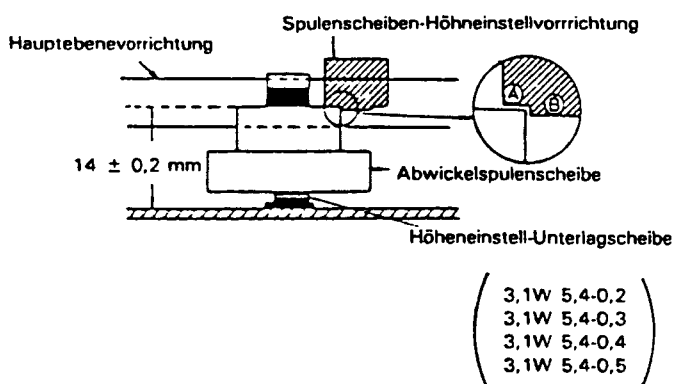


Abbildung 1-6.(b) Seitenansicht

EINSTELLUNG DES SCHNELLVORLAUF-DREHMOMENTS

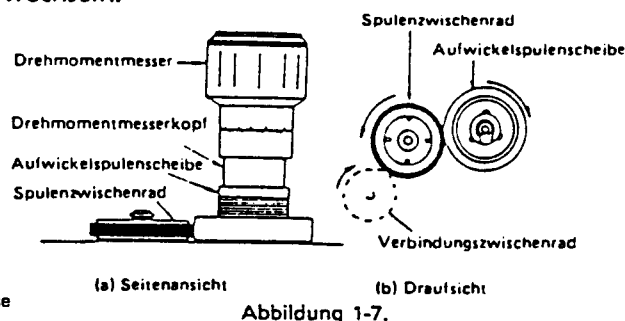
Anmerkungen:

1. Wenn die Drehung beginnt, kann es vorkommen, daß der Drehmomentmesser von der Spulenscheibe abrutscht.
 2. Diese Überprüfung ohne eingesetzte Cassette vornehmen.
- Überprüfung (Siehe Abb. 1-7.)
1. Das Cassettengehäuse entfernen.
 2. Den Drehmomentmesser an die Aufwickelspulenscheibe ansetzen, und die Schnellvorlauf-taste drücken.

3. Den Drehmomentmesser mit der Hand sehr langsam (eine Umdrehung alle 2 bis 3 Sekunden) drehen und nachprüfen, ob er etwas mehr als 600g.cm anzeigt. Sicherstellen, daß zwischen dem Spulenzwischenrad und dem Verbindungszwischenrad oder der Aufwickelspulenscheibe kein Schlupf vorhanden ist.

• Einstellung

Wenn das Schnellvorlauf-Drehmoment weniger als 600g.cm beträgt, das Verbindungszwischenrad, Spulenzwischenrad und die Aufwickelspulenscheibe mit Isopropylalkohol reinigen, dann das Drehmoment nochmals überprüfen. Wenn das Schnellvorlauf-Drehmoment immer noch weniger als 600g.cm beträgt, den Spulenriemen auswechseln.



EINSTELLUNG DES RÜCKSPUL-DREHMOMENTS

Anmerkungen:

1. Wenn die Drehung beginnt, kann es vorkommen, daß der Drehmomentmesser von der Spulenscheibe abrutscht.
2. Die Spulenscheibe nicht verriegeln, und diese Messung nicht längere Zeit vornehmen.

• Überprüfung (Siehe Abb. 1-8.)

1. Das Cassettengehäuse entfernen.
2. Den Drehmomentmesser an die Abwickelspulenscheibe ansetzen, und die Rückspultaste drücken.
3. Den Drehmomentmesser mit der Hand sehr langsam (eine Umdrehung alle 2 bis 3 Sekunden) drehen, bis er etwas mehr als 600g.cm anzeigt. Sicherstellen, daß zwischen dem Spulenzwischenrad und dem Verbindungszwischenrad oder der Abwickelspulenscheibe kein Schlupf vorhanden ist.

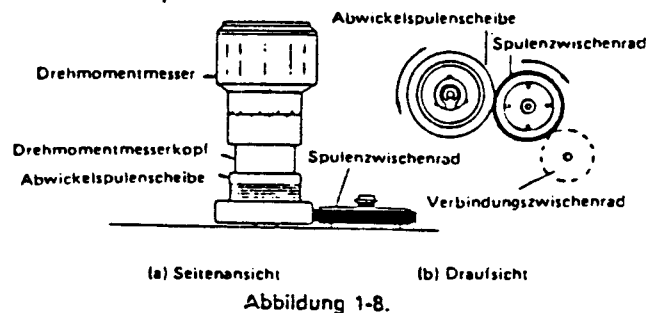


Abbildung 1-8.

- **Einstellung**

Wenn das Rückspul-Drehmoment weniger als 600g.cm beträgt, das Verbindungszwischenrad, Spulenzwischenrad und die Abwickelspulenscheibe mit Isopropylalkohol reinigen, dann das Drehmoment nochmals überprüfen. Wenn das Rückspul-Drehmoment immer noch weniger als 600g.cm beträgt, den Spulenriemen auswechseln.

EINSTELLUNG DES WIEDERGABE-DREHMOMENTS

- **Überprüfung**

1. Das Cassettengehäuse entfernen.
2. Eine Drehmomentmeßcassette in das Gerät einsetzen, und das Gerät auf die Aufnahme-Betriebsart einstellen. Nachprüfen, ob das Drehmoment mit dem vorgeschriebenen Wert übereinstimmt.

Vorgeschriebenes Drehmoment:
 $110 \pm 40 \text{ g.cm}$

Zur Beachtung:

Das gemessene Drehmoment schwankt wegen der Umdrehungsabweichung der Spulenantriebseinheit. Den Mittelwert des Schwankungsbereichs als Meßwert benutzen.

3. Wenn das Drehmoment außerhalb des vorgeschriebenen Wertes liegt, das Spulenzwischenrad, die Aufwickelspulenscheibe und das Verbindungszwischenrad mit Isopropylalkohol reinigen. Dann das Drehmoment nochmals überprüfen.
4. Nachprüfen, ob das Drehmoment in der Aufnahme-Betriebsart innerhalb des vorgeschriebenen Wertes liegt.
5. Wenn das Wiedergabe-Drehmoment immer noch außerhalb des vorgeschriebenen Wertes liegt, die Spulenantriebseinheit auswechseln.

ÜBERPRÜFUNG DES SCHNELLVORLAUF-RÜCKZUGS

Zur Beachtung:

Den Drehmomentmesser fest an die Abwickelspulenscheibe ansetzen; wenn der Drehmomentmesser lose über der Spulenscheibe ist, wird eine ungenaue Messung verursacht.

- **Überprüfung**

1. Das Cassettengehäuse entfernen.
2. Die Schnellvorlauftaste drücken, um das Gerät auf die Schnellvorlauf-Betriebsart einzustellen.
3. Den Drehmomentmesser an die Abwickelspulenscheibe ansetzen, diesen sehr langsam (eine Umdrehung alle 2 bis 3 Sekunden) im Uhrzeigersinn drehen und nachprüfen, ob das Drehmoment innerhalb von $37 \pm 5 \text{ g.cm}$ liegt.

ÜBERPRÜFUNG DES RÜCKSPUL-RÜCKZUGS

Zur Beachtung:

Den Drehmomentmesser fest an die Spulenscheibe ansetzen; wenn der Drehmomentmesser lose über der Spulenscheibe ist, wird eine ungenaue Messung verursacht.

- **Überprüfung**

1. Das Cassettengehäuse entfernen.
2. Die Rückspultaste drücken, um das Gerät auf die Rückspul-Betriebsart einzustellen.
3. Den Drehmomentmesser an die Aufwickelspulenscheibe ansetzen und diese sehr langsam (eine Umdrehung alle 2 bis 3 Sekunden) entgegen dem Uhrzeigersinn drehen und nachprüfen, ob das Drehmoment innerhalb von $20 \pm 5 \text{ g.cm}$ liegt.

ÜBERPRÜFUNG DES BILDSUCHLAUF-RÜCKZUGS

Zur Beachtung:

Den Drehmomentmesser fest an die Aufwickelspulenscheibe ansetzen; wenn der Drehmomentmesser lose über der Spulenscheibe ist, wird eine ungenaue Messung verursacht.

- **Überprüfung**

1. Das Cassettengehäuse entfernen.
2. Die Wiedergabetaste drücken, um das Gerät auf die Wiedergabe-Betriebsart einzustellen.
3. Die Bildsuchlauf-Rückspultaste drücken, um das Gerät auf die Bildsuchlauf-Rückspul-Betriebsart einzustellen.
4. Den Drehmomentmesser an die Aufwickelspulenscheibe ansetzen, diesen sehr langsam (eine Umdrehung alle 2 bis 3 Sekunden) entgegen dem Uhrzeigersinn drehen und nachprüfen, ob das Drehmoment innerhalb von $30 \pm 8 \text{ g.cm}$ liegt.

ÜBERPRÜFUNG DES ANDRUCKROLLENDRUCKES

1. Das Cassettengehäuse entfernen.
2. Die Wiedergabetaste drücken, um das Gerät auf die Wiedergabe-Betriebsart einzustellen.
3. Den Spannungsmesseradapter an der Andruckrollenachse einhaken.
4. Die Andruckrolle mit Hilfe eines Spannungsmessers in Pfeilrichtung → ㊤ ziehen, so daß sich die Andruckrolle von der Antriebsachse weg bewegt.
5. Den Druck allmählich in Pfeilrichtung → ㊤ verringern, damit die Andruckrolle die Antriebsachse berühren kann. Sobald die Andruckrolle die Antriebsachse berührt, den auf dem Spannungsmesser angezeigten Wert ablesen.
6. Nachprüfen, ob der auf dem Spannungsmesser angezeigte Wert im Bereich von 1000 bis 1200g liegt.

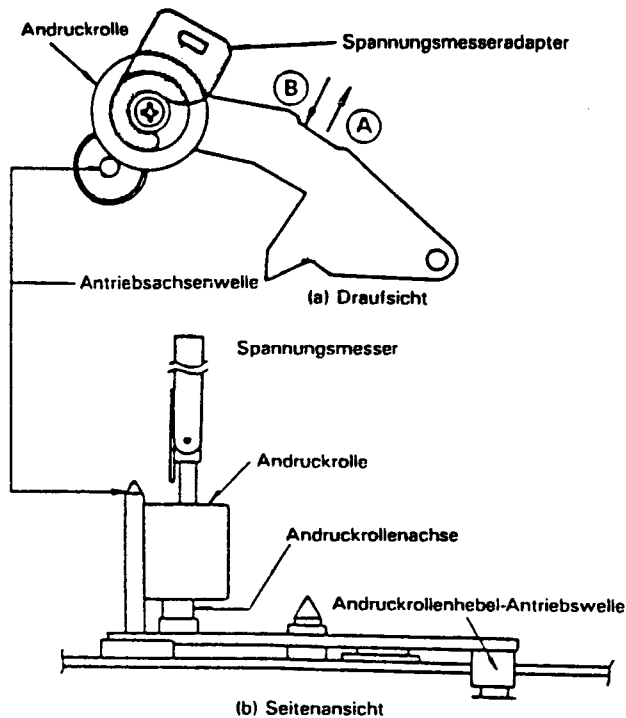


Abbildung 1-9.

ÜBERPRÜFUNG DES SPULENZWISCHENRADDRUCKES

1. Das Cassettengehäuse entfernen.
2. Das Spulenzwischenrad gemäß Abb. 1-10 zu seiner Mittelstellung bewegen.
3. Das Spulenzwischenrad mit einem Spannungsmesser in Pfeilrichtung → A drücken, so daß das Spulenzwischenrad vom Verbindungszwischenrad wegbewegt.
4. Den Druck allmählich in Pfeilrichtung → B verringern, so daß das Spulenzwischenrad wieder das Verbindungszwischenrad berührt. Nachprüfen, ob der auf dem Spannungsmesser angezeigte Wert innerhalb von 105 bis 145g.cm liegt.

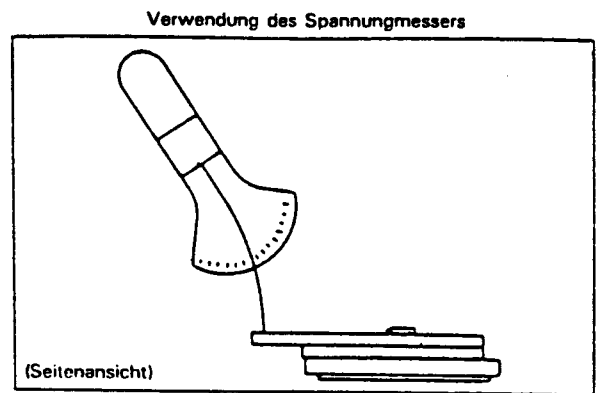
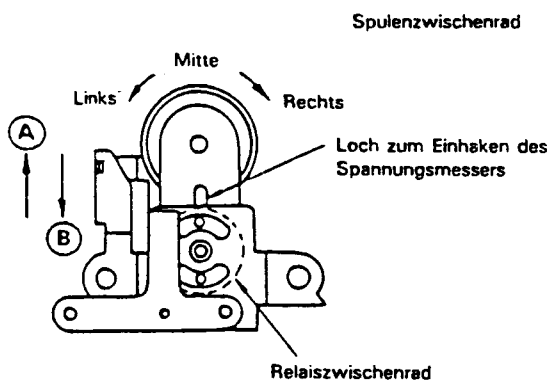


Abbildung 1-10.

EINSTELLUNG DES SPANNSTABS

• Überprüfung der Position (Abb. 1-11)

1. Das Cassettengehäuse entfernen.
2. Eine Videocassette einsetzen, und die Aufnahmetaste drücken, um das Gerät auf die Aufnahme-Betriebsart einzustellen.
3. Die Stabunterteile A und B (siehe Seite 33, Teile 52 und 53) funktionieren, um das Band aus dem Cassettengehäuse zu ziehen, und gleichzeitig bewegt sich der Spannstab nach links, so daß das Band geladen wird. Dabei (in der Lade-Betriebsart) die Position des Spannstabs überprüfen.
4. Am Ende des Bandes (E-180) sicherstellen, daß sich die Mitte des Spannstabs 0,6 bis 1,0mm rechts von der Mitte der Abwickelwiderstandsrolle befindet.
5. Sicherstellen, daß das Band weder gegen den Flansch der Abwickelwiderstandsrolle eingerollt ist noch sich darauf befindet.
6. Während der Bildsuchlauf-Rückspul-Betriebsart nachprüfen, ob die Abwickelspulenscheibe frei vom Spannband ist.

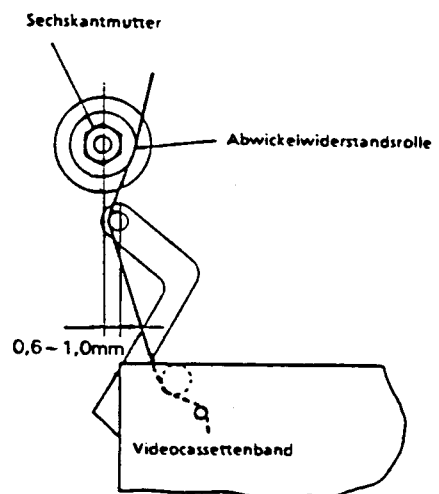


Abbildung 1-11.

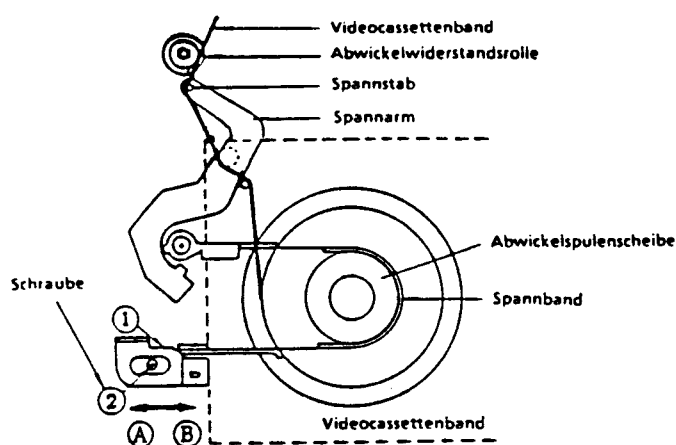


Abbildung 1-12.

• Einstellung der Position (Abb. 1-12)

1. Wenn sich der Spannstab weniger als 1,0mm rechts von der Mitte der Abwickelwiderstandsrolle befindet, den Spannband-Kontrollwinkel ① in Pfeilrichtung → ② verschieben, und die Schraube ② anziehen.
2. Befindet sich der Spannstab weniger als 0,6mm rechts von der Mitte der Abwickelwiderstandsrolle, den Spannband-Kontrollwinkel ① in Pfeilrichtung → ③ verschieben, und die Schraube ② anziehen.

Anmerkungen:

1. Nach der Einstellung Glyptalsicherungslack auf die Schraube auftragen.
2. Wenn die Schraube mit einem größeren Anzugsdrehmoment als dem vorgeschriebenen (5kg.cm) wird, wird das Schraubenloch zerquetscht. (Daher darauf achten, die Schraube nicht zu stark anzuziehen. Den vorgeschriebenen Drehmoment-Schraubenzieher (JiGTD-1200) verwenden.

EINSTELLUNG DES AUFNAHME-/WIEDERGABE-RÜCKZUGS

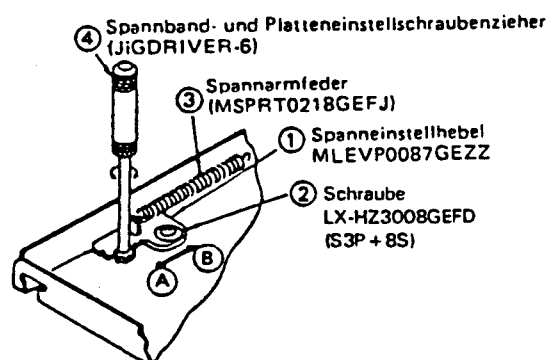
- (1) Bei Verwendung einer Drehmomentmeßcassette

• Überprüfung

1. Das Cassettengehäuse entfernen.
2. Eine Rückzug-Drehmomentmeßcassette in das Gerät einsetzen.
3. Die Aufnahmetaste drücken, um das Gerät auf die Aufnahme-Betriebsart einzustellen. Nachprüfen, ob der Zeiger der Cassette 50 bis 58g.cm anzeigt.
4. Sicherstellen, daß das Videocassettenband um die Halteführung gewickelt wird.
5. Sicherstellen, daß das Band weder lose gewickelt noch am Anfang und Ende beschädigt ist.

• Einstellung

1. Wenn die Bandspannung geringer als der vorgeschriebene Wert ist, die Spanneinstellplatte mit der Spannband- und Platten-Einstellvorrichtung ④ in Pfeilrichtung → ⑤ der Abb. 1-13 bewegen, und die Schraube ② anziehen.
2. Wenn die Bandspannung den vorgeschriebenen Wert überschreitet, die Spanneinstellplatte mit der Spannband- und Platten-Einstellvorrichtung ④ in Pfeilrichtung → ⑥ der Abb. 1-13 bewegen, und die Schraube ② anziehen.



- In Richtung ⑤ : Wenn der angezeigte Wert unterhalb vorgeschriebenen Wertes liegt.
In Richtung ⑥ : Wenn der angezeigte Wert oberhalb vorgeschriebenen Wertes liegt.

Abbildung 1-13.

Zur Beachtung:

Darauf achten, die Schraube nicht zu stark anzuziehen, weil sonst die Schraubengewinde des Chassis beschädigt werden. Unbedingt darauf achten, die vorgeschriebene Vorrichtung (JiGDRIVER-6) zu verwenden.

ÜBERPRÜFUNG DES BREMSDREHMOMENTS

- A) Überprüfung des Bremsdrehmoments auf der Abwickelseite

• Überprüfung

1. Die Cassettengehäuseeinheit entfernen.
2. Sicherstellen, daß sich das Gerät in der Stopp-Betriebsart befindet.
3. Das Spulenzwischenrad von der Abwickelspulenscheibe trennen, und den Drehmomentmesser an die Abwickelspulenscheibe ansetzen.
4. Den Drehmomentmesser langsam im Uhrzeigersinn drehen, so daß sich die Spulenscheibe und der Zeiger des Drehmomentmessers mit der gleichen Geschwindigkeit drehen. Diesen Vorgang entgegen dem Uhrzeigersinn der Abwickelbremse wiederholen. Sicherstellen, daß die Werte innerhalb der vorgeschriebenen Bereiche liegen (bei Drehung im Uhrzeigersinn = 280 bis 720g.cm, bei Drehung entgegen

dem Uhrzeigersinn = 110 bis 230 g.cm) und daß das Bremsdrehmoment an der Aufwickelspulenscheibe im Uhrzeigersinn mindestens doppelt so hoch wie dasjenige entgegen dem Uhrzeigersinn ist.

• **Einstellung**

1. Wenn das Abwickelbremsdrehmoment außerhalb der vorgeschriebenen Bereiche liegt (bei Drehung im Uhrzeigersinn = 280 bis 720 g.cm, bei Drehung entgegen dem Uhrzeigersinn = 110 bis 230 g.cm), die Abwickelspulenscheibe reinigen, dann das Drehmoment nochmals überprüfen.
2. Wenn das Abwickelbremsdrehmoment immer noch außerhalb der vorgeschriebenen Bereiche liegt, die Hauptbremsfeder auswechseln, dann die Überprüfung erneut vornehmen.

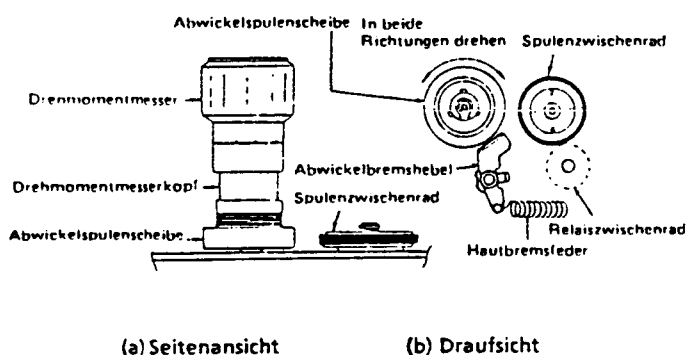
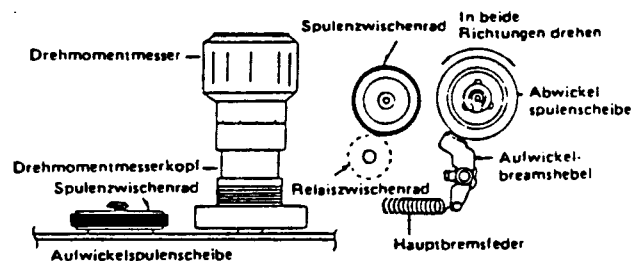


Abbildung 1-14.

B) Überprüfung des Bremsdrehmoments auf der Aufwickelseite

• **Überprüfung**

1. Die Cassettengehäuseeinheit entfernen.
2. Sicherstellen, daß sich das Gerät in der Stopp-Betriebsart befindet.
3. Das Spulenzwischenrad von der Aufwickelspulenscheibe trennen, und den Drehmomentmesser an die Aufwickelspulenscheibe ansetzen.
4. Den Drehmomentmesser langsam im Uhrzeigersinn drehen, so daß sich die Spulenscheibe und der Zeiger des Drehmomentmessers mit der gleichen Geschwindigkeit drehen. Diesen Vorgang entgegen dem Uhrzeigersinn der Aufwickelbremse wiederholen. Sicherstellen, daß die Werte innerhalb der vorgeschriebenen Bereiche liegen (bei Drehung im Uhrzeigersinn = 280 bis 720 g.cm, bei Drehung entgegen dem Uhrzeigersinn = 110 bis 230 g.cm) und daß das Bremsdrehmoment an der Abwickelspulenscheibe im Uhrzeigersinn mindestens doppelt so hoch wie dasjenige entgegen dem Uhrzeigersinn ist.



(a) Seitenansicht

(b) Draufsicht

Abbildung 1-15.

• **Einstellung**

1. Wenn das Aufwickelbremsdrehmoment außerhalb der vorgeschriebenen Bereiche liegt (bei Drehung im Uhrzeigersinn = 280 bis 720 g.cm, bei Drehung entgegen dem Uhrzeigersinn = 110 bis 230 g.cm), die Aufwickelspulenscheibe reinigen, dann das Drehmoment nochmals überprüfen.
2. Wenn das Aufwickelbremsdrehmoment immer noch außerhalb der vorgeschriebenen Bereiche liegt, die Hauptbremsfeder auswechseln, dann die Überprüfung erneut vornehmen.

AUSWECHSELN DES TON-/STEUERKOPFES

Zur Beachtung:

Nach dem Auswechseln nachprüfen, ob der Bandlauf reibungslos ist. Unter allen Umständen vermeiden, den Kopf (in Abb. 1-17(c) durch "→" gekennzeichnet) zu berühren.

• **Auswechseln (Siehe Abb. 1-16 und Abb. 1-17.)**

1. Die an die Ton-/Steuerkopf-Leiterplatte angelöteten Zuleitungen ablöten und diese von der Leiterplatte entfernen.
2. Die Neigungseinstellschraube ② mit einem Kreuzschlitzschraubenzieher lösen.
3. Die Azimuteinstellschraube ⑤ (3P + 8S) mit einem Kreuzschlitzschraubenzieher abschrauben.
4. Die Ton-/Steuerkopfschraube ④ mit einem Kreuzschlitzschraubenzieher abschrauben, wobei auf die Feder ⑦ zwischen der Ton-/Steuerkopfschraube ④ und der Ton-/Steuerkopfeinheit ① zu achten ist.
5. Den an den Ton-/Steuerkopf angelöteten Steckverbinder ablöten, und diesen Steckverbinder an die neue Ton-/Steuerkopf-Leiterplatte anlöten.
6. Die Ton-/Steuerkopfeinheit ① so anbringen, daß sich der Arm und die Platte des Ton-/Steuerkopfes fast parallel zueinander befinden.
7. Den Ton-/Steuerkopf-Neigungswinkel gemäß Abb. 1-19 einstellen.

8. Ein Abgleichband wiedergeben, und die Höhe des Ton-/Steuerkopfes nach Augenmaß grob einstellen, wobei die Sechskantmutter zur Einstellung des Ton-/Steuerkopfes mit dem Spezialstiftschlüssel zu drehen ist, bis sich das Band in der nachstehend gezeigten Lage befindet. (Siehe Abb. 1-16.)

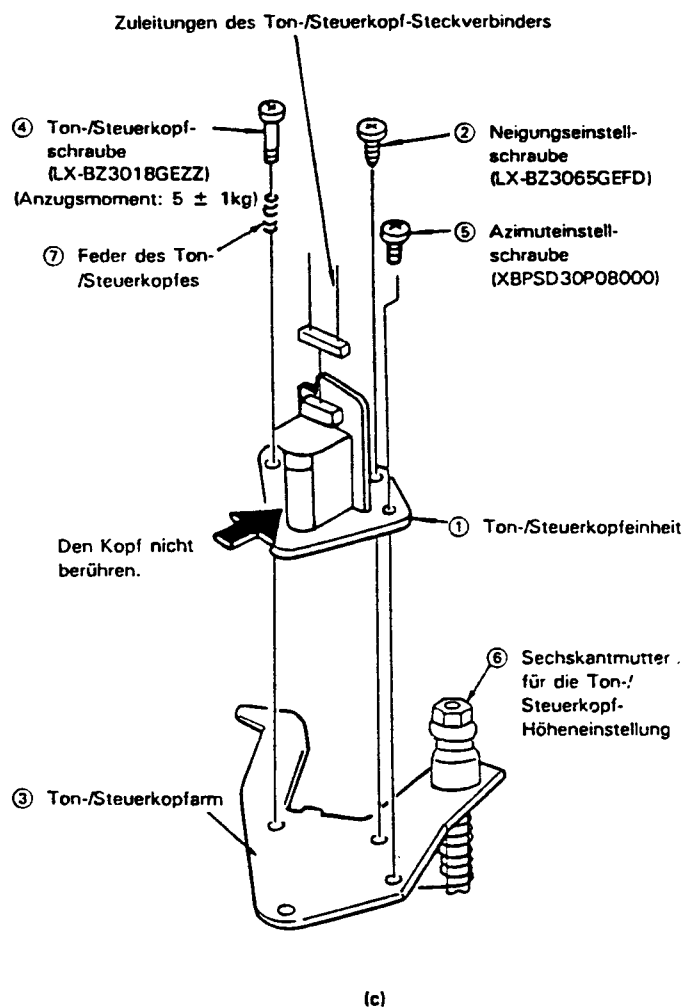
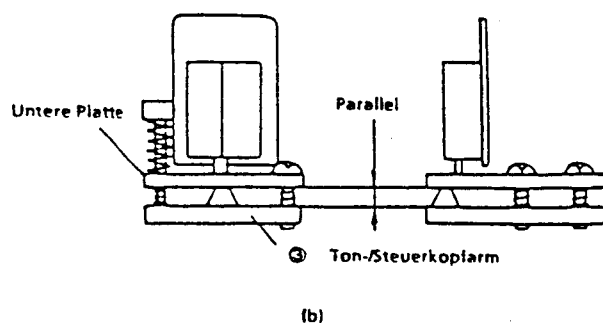
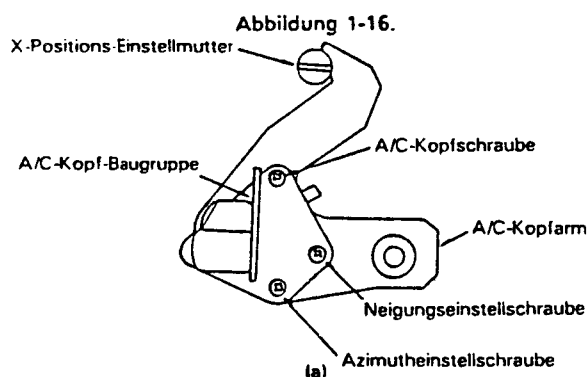
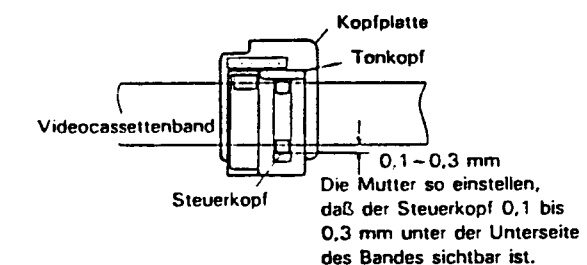


Abbildung 1-17.

9. Das Gerät auf die Entlade-Betriebsart einstellen. Die Ton-/Steuerkopf-Neigungseinstellvorrichtung gemäß Abb. 1-18 und 1-19 auf das Hauptchassis stellen. Die Einstellschraube mit einem Sechskantstiftschlüssel (1,5mm, JiGHW-0015) langsam drehen, bis zwischen der Vorrichtung und dem Ton-/Steuerkopf kein Zwischenraum mehr vorhanden ist.

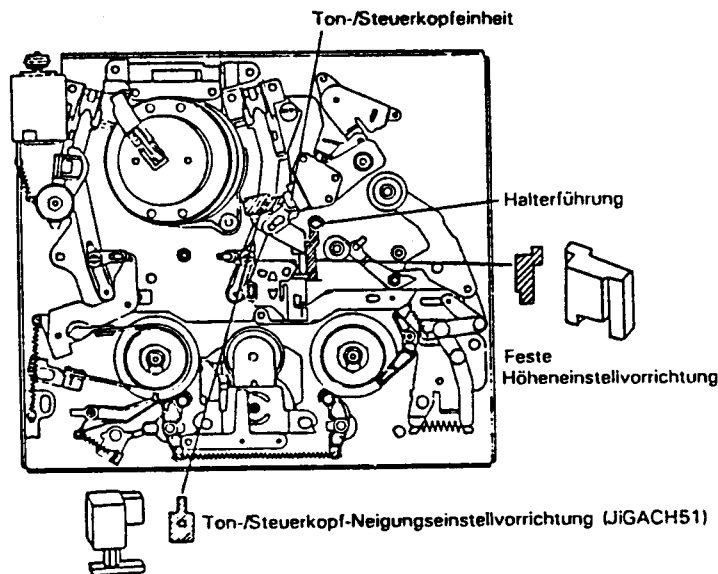


Abbildung 1-18.

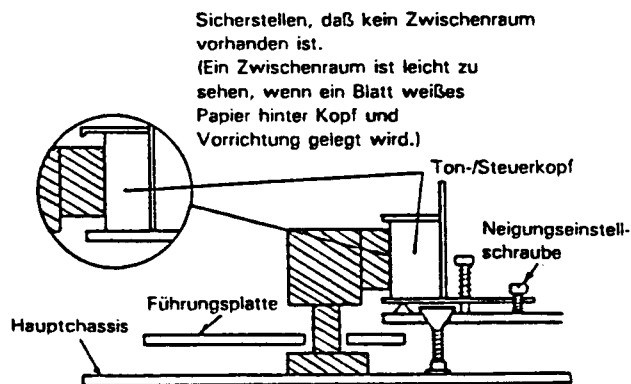


Abbildung 1-19.

10. Nach Auswechseln des Ton-/Steuerkopfes den Bandlauf einstellen.

EINSTELLUNG DES BANDLAUFS

Dazu gehören die Grobeinstellung mit Hilfe eines Abgleichbandes und die Einstellung der Höhe der Halterführung, Rückwärtsführung und des Ton-/Steuerkopfes sowie des Azimuts und der X-Position der Führungsrolle.

• Das Cassettengehäuse entfernen

1. Die seitliche und vertikale Position des Spannstabs sowie den Rückzug überprüfen und einstellen.
2. Den Neigungswinkel des Ton-/Steuerkopfes gemäß Abb. 1-19 einstellen.

Zur Beachtung:

Der Neigungswinkel muß auf die gleiche Weise wie beim Auswechseln des Kopfes eingestellt werden, selbst wenn der Ton-/Steuerkopf bereits eingestellt ist.

3. Nach den obigen Einstellungen den Bandlauf mit Hilfe eines Abgleichbandes grob einstellen.

- a. Ein Oszilloskop an die Meßpunkte für den Wiedergabe-Chrominanzgang (TP201), den Kopf-Umschaltimpuls (TP202) und die Masse (TP203) anschließen. Das Wiedergabe-Chrominanzsignal durch den Kopf-Umschaltimpuls des TP202 auslösen lassen. (Siehe Abb. 2-10.)
- b. Die Einstellschraube der Führungsrolle lösen und diese mit einem Führungsrollen-Einstellschraubenzieher (JIGDRIVERH-4) gerade so fest anziehen, daß sich die Führungsrolle reibungslos dreht.
- c. Die Abgleichbandcassette (VROCPSV) auf die Spulenscheibe setzen.
Zur Beachtung:
Wenn das Abgleichband ohne Cassettengehäuse auf die Spulenscheibe gesetzt wird, das Band mit einem Gewicht von 400 bis 650g beschweren.
- d. Das Gerät auf die Wiedergabe-Betriebsart einstellen.
- e. Die Wellenformen des Wiedergabe-Chrominanzsignals beobachten, und den Abtastregler so einstellen, daß der Frequenzgang des Wiedergabe-Chrominanzsignals linear ist.

Diese Einstellung ist einwandfrei, wenn sich beim Drehen des Abtastreglers am HF-Ausgang ein linearer Frequenzgang ergibt. Läßt sich kein linearer Frequenzgang erzielen, die Führungsrolle mit Hilfe eines Abgleichbandes grob einstellen, bis der Wiedergabe-Chrominanzgang linear ist. Die Einstellmutter für die X-Position so einstellen, daß die Wiedergabe-Chrominanz-Hüllkurve in der Abtastmitte fast maximal wird. Bei der Grobeinstellung insbesondere auf die Ausgangsseite achten. (Siehe Abb 1-20.)

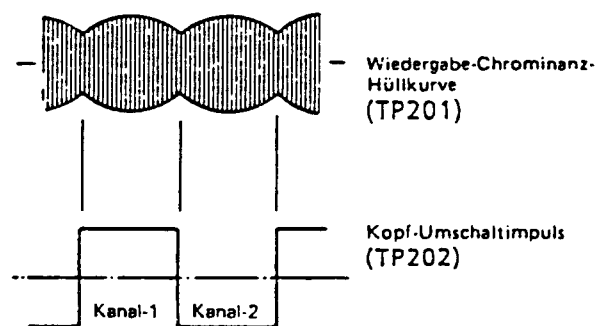


Abbildung 1-20.

4. Nach der Grobeinstellung des Bandlaufs die Ton-/Steuerkopfhöhe und den Azimut einstellen.
 - a. Das 7kHz-Tonsignal des Abgleichbandes (treppenförmige Wellenform für das Videosignal) wiedergeben, und den Tonausgang auf einem Oszilloskop beobachten.

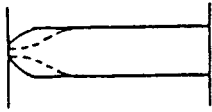
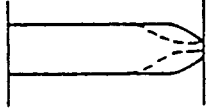


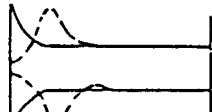
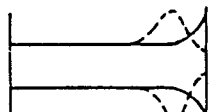


	Band ist zu hoch eingestellt.		Band ist zu niedrig eingestellt.	
	Abwickelseite	Aufwickelseite	Abwickelseite	Aufwickelseite
				
				
Einstellung	Die abwickelseitige Führungsrolle im Uhrzeigersinn drehen (um die Führungsrolle nach unten zu bewegen), damit sich eine lineare Hüllkurve ergibt.	Die aufwickelseitige Führungsrolle im Uhrzeigersinn drehen (um die Führungsrolle nach unten zu bewegen), damit sich eine lineare Hüllkurve ergibt.	Die abwickelseitige Führungsrolle entgegen dem Uhrzeigersinn drehen (um die Führungsrolle nach oben zu bewegen), damit das Band etwas lose wird. Dann die abwickelseitige Führungsrolle im Uhrzeigersinn drehen, damit sich eine lineare Hüllkurve ergibt.	Die aufwickelseitige Führungsrolle entgegen dem Uhrzeigersinn drehen (um die Führungsrolle nach oben zu bewegen), damit das Band etwas lose wird. Dann die aufwickelseitige Führungsrolle im Uhrzeigersinn drehen, damit sich eine lineare Hüllkurve ergibt.

Abbildung 1-21.

- b. Die Azimuteinstellschraube ⑤ (3P+8S) einstellen, um den maximalen Tonausgangspegel zu erhalten.
- c. Die Ton-/Steuerkopf-Höheneinstellmutter ③ mit dem Spezialkastenschraubenzieher langsam drehen, um den maximalen Tonausgangspegel zu erhalten.
- d. Die Azimuteinstellschraube ⑤ (3P+8S) einstellen, um den maximalen Tonausgangspegel zu erhalten.
Nach dieser Einstellung Glyptalsicherungsmittel auf die Schrauben und Muttern auftragen.
5. Nach der Einstellung des Ton-/Steuerkopfes die endgültigen Einstellungen des Bandlaufs und der X-Position vornehmen.
 - a. Das Oszilloskop an die Meßpunkte für den Wiedergabe-Chrominanz Ausgang (TP201), den Kopfumschaltimpuls (TP202) und die Masse (TP203) anschließen. Das Wiedergabe-Chrominanzsignal durch den Kopfumschaltimpuls des TP202 auslösen lassen.
 - b. Das Bandlauf-Abgleichband (VROCPSV) wiedergeben.
 - c. Schließlich die Höhe der Führungsrolle so einstellen, daß die Hüllkurve möglichst linear ist.
Den Spurlageregler nach links und rechts drehen, während die Führungsrolle eingestellt wird, um eine möglichst lineare Wellenform der Hüllkurve zu erhalten.

Wenn sich das Band auf der schrägen Führung nach oben oder unten verschiebt, nehmen die Wiedergabe-Chrominanz-Wellenformen das in Abb. 1-21 gezeigte Aussehen an.

Die Einstellung gemäß Abbildung so vornehmen, daß sich die maximale Linearität der Hüllkurve ergibt.

Zur Beachtung:

Die Einstellung wird für den Kanal 1 des Umschaltpunktes (niedriger Pegel) vorgenommen. Die gestrichelten Linien stellen die Hüllkurven-Wellenform bei extremer Bandverschiebung dar.

Nach der Einstellung die Stellschraube der Führungsrolle fest anziehen.

Erneut ein Abgleichband (VROCPSV) in der Entlade-Betriebsart wiedergeben und sicherstellen, daß sich der Wiedergabe-Chrominanz Ausgang nicht ändert.

- d. Die X-Position wird nach der Bandlaufeinstellung eingestellt. Den Spurlageregler auf "preset" (Voreinstellung) einstellen, die Einstellmutter für die X-Position gemäß Abb. 1-22 mit dem speziell dafür vorgesehenen Schraubenzieher so drehen, daß sich die maximale Hüllkurve der unteren Seite des Umschaltimpulses ergibt, dann den Ton-/

Steuerkopf einstellen. Nach der Einstellung der X-Position den Kopf-Umschaltpunkt auf $6,5 \pm 0,5H$ einstellen. Die Linearität der Hüllkurve sowie den Klang durch eine Eigenaufnahme überprüfen.

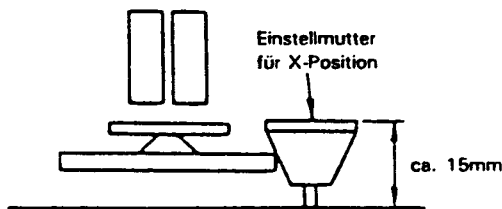


Abbildung 1-22.

POSITIONIERUNG DES HALBLADESTIFTS

Zur Beachtung:

- Der Halbladestift muß in den folgenden Fällen neu positioniert werden:
 - Wenn der A/C-Kopf entfernt oder ausgewechselt wurde.
 - Wenn A/C-Kopfhöhe, Kopfazimuth oder X-Position justiert wurden.
 - Wenn Bauteile, die mit der Halbladung in Zusammenhang stehen entfernt oder ausgewechselt wurden (wie z.B. Halbladenocken, Nockenhebel, Halbladeversetzer, Zwischenhebel, Kupplungsplatte, Halbladehebel und -feder).
 - Wenn die mechanische Steuereinheit entfernt oder ausgewechselt wurde.
- Der Halbladestift muß in den folgenden Fällen ggf. überprüft und neu positioniert werden, bevor auf Wiedergabe geschaltet wird:
 Auswechseln des A/C-Kopfes (in diesem Falle müssen A/C-Kopfhöhe, Kopfazimuth und Neigung feinjustiert und die X-Positions-Justiermutterhöhe vorjustiert werden), Auswechseln von mit der Halbladung in Zusammenhang stehenden Bauteilen, und Auswechseln der mechanischen Steuereinheit.
- Nach dem Auswechseln des A/C-Kopfes zuerst die Justierung der X-Position vornehmen, dann die Positionierung des Halbladestifts prüfen. Die Position ggf. nachstellen.

• Vorgehensweise

- Das Cassettengehäuse öffnen.
Hinweis: Diese Einstellung kann auch ohne Öffnen des Cassettengehäuses erfolgen. In jedem Fall muß jedoch der Netzstecker von der rechten Gehäuseseite abgezogen werden.
- Sicherstellen, daß das Gerät auf Stoppbetrieb geschaltet ist.
- Die Zwischenhebelschraube (XBPSD26P05JSO) mit einem Anzugsmoment von ca. 1 kg.cm angezogen lassen. Den Zwischenhebel dann

mit dem Gelenkschlüssel (JIGDRIVER-6) in Pfeilrichtung A drehen.

- Den Zwischenhebel in Pfeilrichtung B drehen. Einen Drehmomentschlüssel am Halbladestift ansetzen und die Zwischenhebelschraube für korrekte Positionierung des Halbladestifts anziehen.

Hinweis: Hierfür den Drehmomentschlüssel (JIGTD1200) verwenden. Anzugsmoment auf 5 kg.cm einstellen.

- Das Gerät auf Cassettenauswurf schalten, um den Halbladestift zurückzubringen. Gerät wieder auf Stopp schalten (damit der Halbladestift herauskommt) um das Spiel zwischen Halbladestift und A/C-Kopf auf 0,4 bis 0,7 mm zu prüfen.
- Zur Prüfung auf korrekten Bandlauf das Band in allen Betriebsarten (FF, REW und Wiedergabe) laufen lassen.

Hinweis: Nach einem Austausch des A/C-Kopfes die Position des Halbladestifts voreinstellen (Schritt 1-5 weiter oben). Anschließend die X-Position des A/C-Kopfes einstellen und die Position des Halbladestifts feinjustieren (Schritt 1-6 weiter oben).

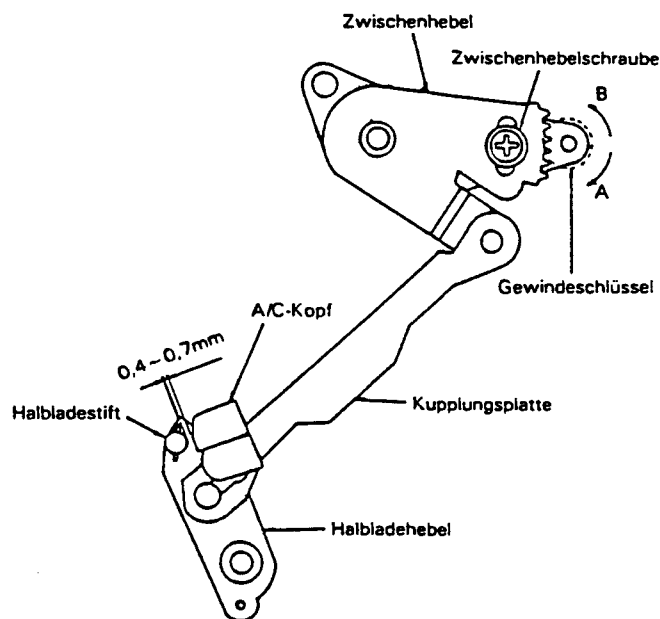


Abbildung 1-23.

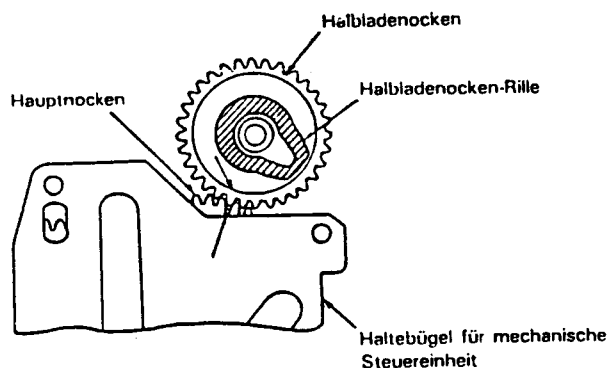


Abbildung 1-24.

AUSWECHSELN DER OBEREN TROMMEL

Zur Beachtung:

Der Eingriff zwischen der unteren Trommel (Außendurchmesser) und der oberen Trommel (Innendurchmesser) ist in Mikroneneinheiten sehr genau; daher beim Auswechseln der Trommeln besonders vorsichtig vorgehen. Selbst wenn nur einige Fremdkörper eindringen, wird die Genauigkeit beim Zusammenbauen beeinträchtigt.

• Auswechseln (Siehe Abb. 1-25)

1. Die Zuleitungen ① bis ④ vom Videokopf ablöten und diese entfernen.
2. Die beiden Schrauben ⑤ [Messingschrauben mit Unterlagscheiben (W3P + 9S)] mit einem Kreuzschlitzschraubenzieher entfernen.
3. Die obere Trommel (durch Hochziehen mit der Vorrichtung zum Auswechseln der oberen Trommel) herausziehen. (Siehe Abb. 1-25.)

Anmerkungen:

1. Die Trommeloberfläche nicht mit bloßen Händen berühren.
2. Beim Anziehen der Schrauben nicht darauf schlagen.

• Wiedereinbauen

1. Die neue obere Trommel in die in Abb. 1-25 gezeigte Lage bringen, und die Zuleitungen richtig verlegen.

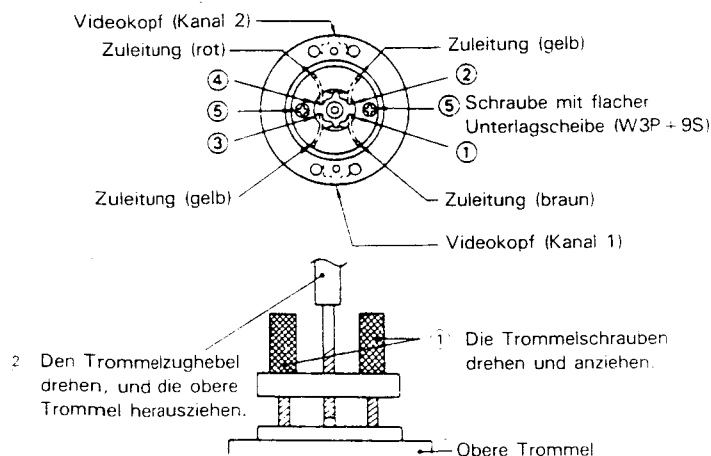


Abbildung 1-25.

Anmerkungen:

1. Vor dem Auswechseln der oberen Trommel sicherstellen, daß sich weder Kratzer noch Staub auf dem Rand oder auf der Außenfläche der unteren Trommel befinden.
2. Vor dem Auswechseln der oberen Trommel sicherstellen, daß sich weder Kratzer noch Staub auf dem Rand oder auf der Innenfläche der oberen Trommel befinden.
3. Beim Zusammenbauen dieser Teile die obere Trommel langsam und mit äußerster Vorsicht in die untere Trommel einsetzen, wobei die obere Trommel nicht verkantet sein darf.
4. Beim Zusammenbauen dieser Teile darauf achten, daß keine Fremdkörper dazwischen gelangen.
5. Beim Hineindreihen der Schrauben keine zu starke Kraft aufwenden.

2. Die obere Trommel mit den beiden Schrauben ⑤ befestigen.

3. Die Zuleitungen vom Videokopf ① bis ④ an ihren jeweiligen Anschlußstellen anlöten.

Zur Beachtung:

Das Anlöten sollte schnell und vorsichtig vorgenommen werden, ohne dabei die angrenzenden Muster zu berühren.

4. Nach dem Auswechseln darauf achten, die BandlaufEinstellung und die folgenden Einzelheiten zu überprüfen.

- Einstellung des Wiedergabe-Umschalt-punktes (Siehe Seite 54.)
- Überprüfung und Einstellung der X-Position (Siehe Seite 47.)

AUSWECHSELN DER LAUFWERK-STEUREINHEIT

• Ausbauen (Abb. 1-26)

1. Die Nockenschalterzuleitungen ablöten.
2. Zwischenring ⑧, E-Ring ⑨ und Nockenhebel ⑩ entfernen.
3. Den E-Ring ① entfernen.
4. Die drei Schrauben ② (LX-HZ3027GEFD) entfernen.
5. Die Laufwerk-Steuer-einheit ③ entfernen.

• Einbauen (Abb. 1-26)

1. Die Schlitzunterlagscheibe ④ entfernen.
2. Halbladenocken ⑤ entfernen.
3. Die Gleitstück-einheit (A) 11 so einstellen, daß das Einstelloch ④ des Chassis auf die Einstell-löcher der Gleitstück-einheit und des Brems-antriebshebels 13 ausgerichtet ist. (Die Haupt-bremsfeder 14 entfernen, um die erwähnten Löcher einfacher aufeinander ausrichten zu können.)
4. Die Spannarmfeder entfernen, und die Ladezahn-räder (A) ⑥ und (B) ⑩ ganz in die Pfeil-richtung → ⑥ drehen, um das Gerät auf die Ent-lade-Betriebsart einzustellen.
5. Den Bremsnocken ⑥ der Laufwerk-Steuer-einheit in Pfeilrichtung drehen, bis sich das

Einstelloch ⑥ des Segmentzahnrad in der Mitte des Segmenteinstelloches für den Stützwinkel befindet.

6. Die Laufwerk-Steereinheit ③ am Hauptchassis anbringen. Dies ist auf einfache Weise möglich, wenn die Gleitstückeinheit (A) 11 nach links und rechts bewegt wird.
7. Die drei Schrauben ② anziehen.
8. Den E-Ring ① einpassen.
9. Die Nockenschalterzuleitungen anlöten.
10. Halbladenocken ⑤ einbauen.

Hinweis:

Bei der Montage des Halbladenockens die Markierung "△" ③ des Hauptnockens mit der Markierung "□" ④ des Halbladenockens in Übereinstimmung bringen.

11. Die Unterlagscheibe ④ anbringen.
12. Nockenhebel ⑩, E-Ring ⑨ und Zwischenring ⑧ wieder montieren.

Hinweis:

Beim Einbau des Nockenhebels seinen Bolzen in die Halbladenocken-Rille lassen.

13. Alle entfernten Feder, wie z.B. die Hauptbremsfeder 14, wieder anbringen. (Siehe Seite 33.)

Anmerkungen:

1. Beim Anziehen der Schrauben das vorgeschriebene Anzugsdrehmoment nicht überschreiten, weil sonst die Schraubengewinde im Schraubenauge zerquetscht werden können.
2. Nach dem Zusammenbauen nachprüfen, ob sich die Teile in der richtigen Lage befinden und ob das Gerät in allen Betriebsarten einwandfrei funktioniert.

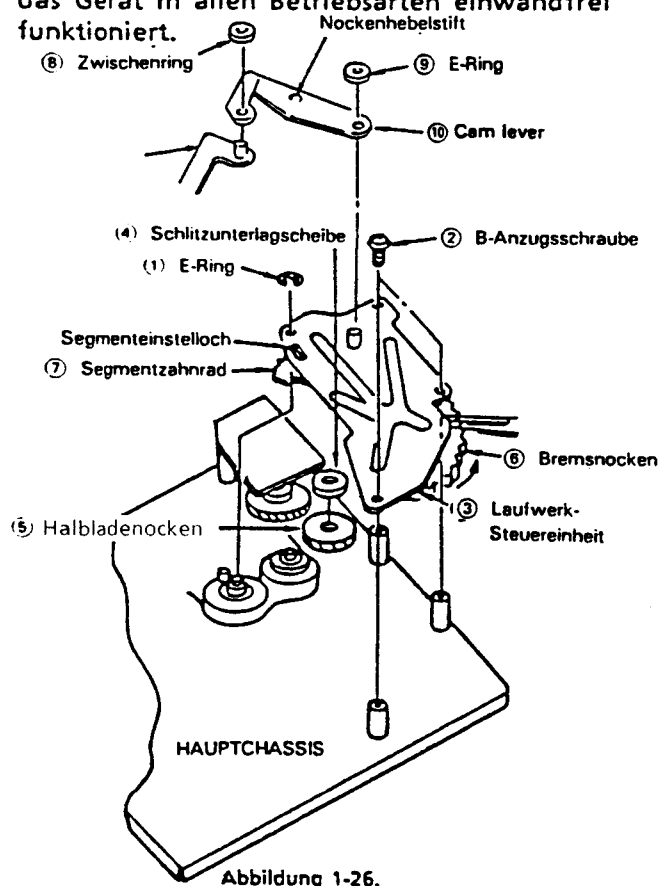


Abbildung 1-26.

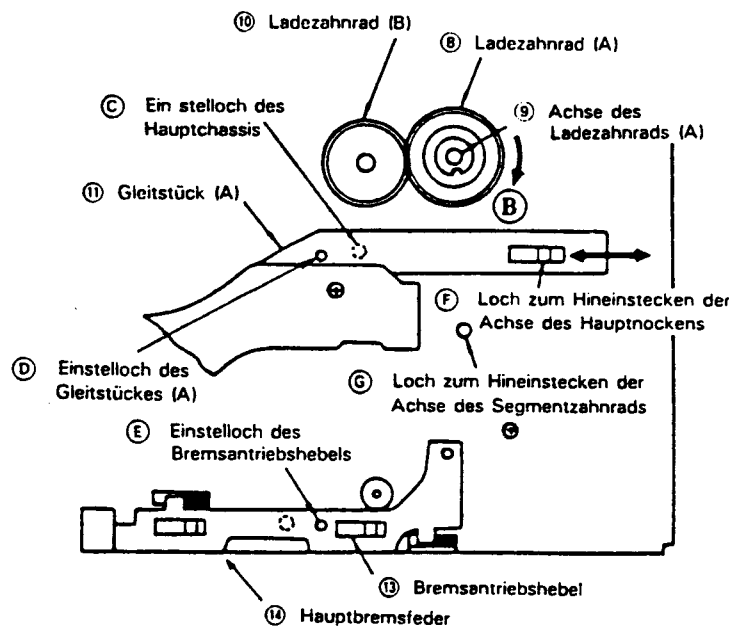


Abbildung 1-27.

AUSWECHSELN DES NOCKENSCHALTERS

• **Ausbauen (Abb. 1-28)**

1. Die Schlitzunterlagscheibe ① entfernen und Zugauslösehebel ⑧.
2. Den Bremsnocken ② vom Laufwerk-Steuerwinkel ③ abnehmen.
3. Den Nockenschalter ④ entfernen, wobei seine Klammern in die Pfeilrichtungen gehalten werden sollten. [Siehe Abb. 1-28 (B).]

• **Einbauen**

1. Den Nockenschalter ④ am Bremsnocken ② anbringen.
2. Die aus dem Nockenschalter ④, dem Bremsnocken ② und dem Zugauslösehebel ⑧ bestehende Einheit am Laufwerk-Steuerwinkel ③ anbringen.

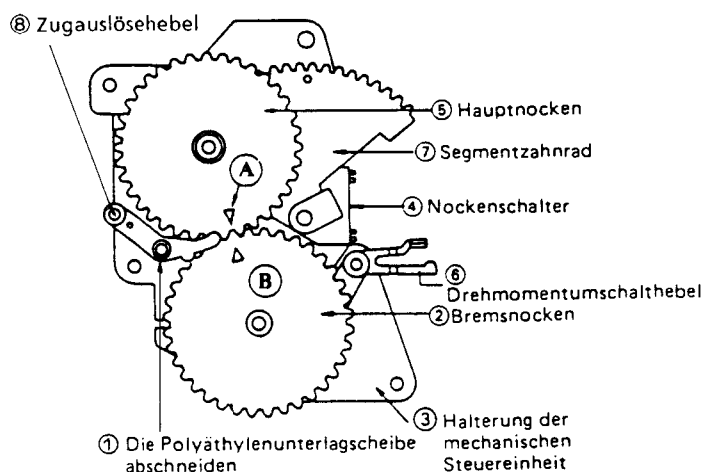
Zur Beachtung:

Beim Anbringen an der Laufwerk-Steereinheit darauf achten, daß die Einstellmarke ① des Hauptnockens auf die Einstellmarke ② des Bremsnockens ausgerichtet ist, und außerdem den Drehmoment-Umschalthebel auf die Kerbe im Bremsnocken ausrichten.

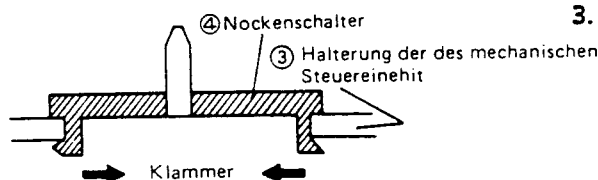
3. Die Schlitzunterlagscheibe ① anbringen.

Anmerkungen:

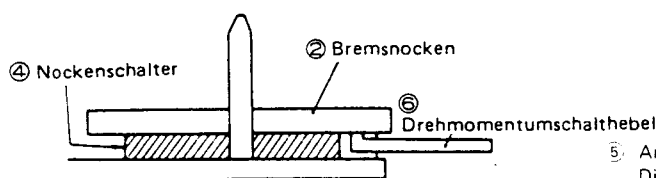
1. Nach dem Zusammenbauen den Bremsnocken drehen und nachprüfen, ob der Drehmoment-Umschalthebel in die Kerbe im Nocken einrastet.
2. Beim Auswechseln des Haupt- und Bremsnockens darauf achten, die Nockenkerbe leicht einzufetten.



(a)



(b)



(c)

Abbildung 1-28.

AUSWECHSELN DES ANTRIEBSACHSEN-DIREKTANTRIEBSMOTORS

• Ausbauen

1. Den Zuleitungs-Steckverbinder ① (flacher Typ) von der Antriebsachsen-Direktantriebsmotor-Steuerleiterplatte ⑥ entfernen. Beim Entfernen des Steckverbinders die Leiterplatte niederdrücken, damit diese nicht bricht.
2. Die Schraube ③ entfernen, mit der die Antriebsachsen-Direktantriebsmotor-Steuerleiterplatte ⑥ befestigt ist. Die Schraube ④ entfernen, mit der die Kühlkörperplatte des Antriebsachsen-Direktantriebsmotors am Hauptchassis befestigt ist.
3. Die drei Schrauben ② (2,6P + 5,5S, S. Cup, LX-HZ3036GEFD) abschrauben, und den Antriebsachsen-Direktantriebsmotor ⑤ vom Hauptchassis entfernen.

• Einbauen

1. Den Antriebsachsen-Direktantriebsmotor am Hauptchassis anbringen und dabei darauf achten, daß die Antriebsachse nicht gegen das Hauptchassis schlägt, dann den Motor mit den drei Schrauben ② befestigen.
2. Die Antriebsachsen-Direktantriebsmotor-Steuerleiterplatte ⑥ mit der B-Anzugsschraube ③ am Hauptchassis befestigen. Die Kühlkörperplatte des Antriebsachsen-Direktantriebsmotors mit der Spannschraube ④ am Hauptchassis befestigen.
3. Den Zuleitungs-Steckverbinder ① (flacher Typ) in die Antriebsachsen-Direktantriebsmotor-Steuerleiterplatte ⑥ stecken.

Anmerkungen:

1. Nach dem Einbauen des Antriebsachsen-Direktantriebsmotors darauf achten, einen Probelauf durchzuführen und dabei die Drehung zu überprüfen.
2. Die Servoschaltung überprüfen und einstellen.
3. Beim Anziehen der B-Anzugsschraube ③ das vorgeschriebene Anzugsdrehmoment nicht überschreiten, weil sonst die Schraubengewinde im Schraubenauge zerquetscht werden können.

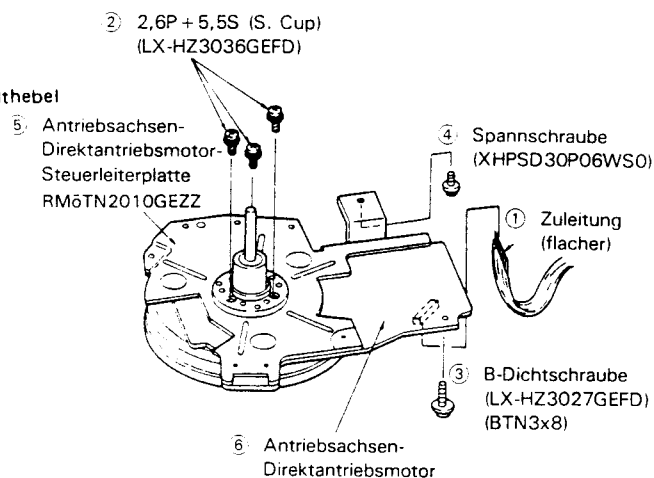


Abbildung 1-29.

ÜBERPRÜFUNG DES UNIVERSALBREMSHEBELS

• Überprüfung

1. Das Cassettengehäuse entfernen.
2. Die Wiedergabetaste drücken, um das Gerät auf die Wiedergabe-Betriebsart einzustellen.
3. Das Spulenzwischenrad von der Aufwickelspulenscheibe entfernen, und den Drehmomentmesser (JiGTG0090) ansetzen.
4. Den Drehmomentmesser langsam drehen, so daß sich die Spulenscheibe und der Zeiger des

Drehmomentmessers mit der gleichen Geschwindigkeit bewegt; sicherstellen, daß der Einstellwert vorschriftsmäßig ist (innerhalb von $40 \pm 10 \text{ g.cm}$).

AUSWECHSELN DES LADEMOTORS

- **Auswechseln (Abb. 1-30)**

1. Die vier Schrauben (XEBSD40P16000) entfernen, mit denen das Laufwerkchassis am Kunststoffrahmen befestigt ist.
2. Den Zuleitungs-Steckverbinder des Trommel-Direktantriebsmotors und den Zuleitungs-NF-Steckverbinder des Lademotorrelais trennen.
3. Den Laderiemen ① entfernen.
4. Die Spannschraube ⑥ (XHPSD-30P08WS0) entfernen. Das Laufwerkchassis zum leichten Entfernen neigen.
5. Die beiden Schrauben ② (XBPSD30P05J00) abschrauben, und den Lademotor ④ vom Lademotorhalter ③ entfernen.
6. Die Lademotor-Leiterplatte ⑤ entfernen.
7. Den Lademotor zusammen mit der Riemenscheibe ⑦ auswechseln.

Anmerkungen:

1. Sicherstellen, daß der Zwischenraum zwischen dem Motor und der Lademotor-Riemenscheibe $4,5 \pm 0,1 \text{ mm}$ beträgt.
2. Nach dem Einbauen des Lademotors darauf achten, einen Probelauf durchzuführen und dabei den Motor auf reibungslose Bewegung überprüfen.

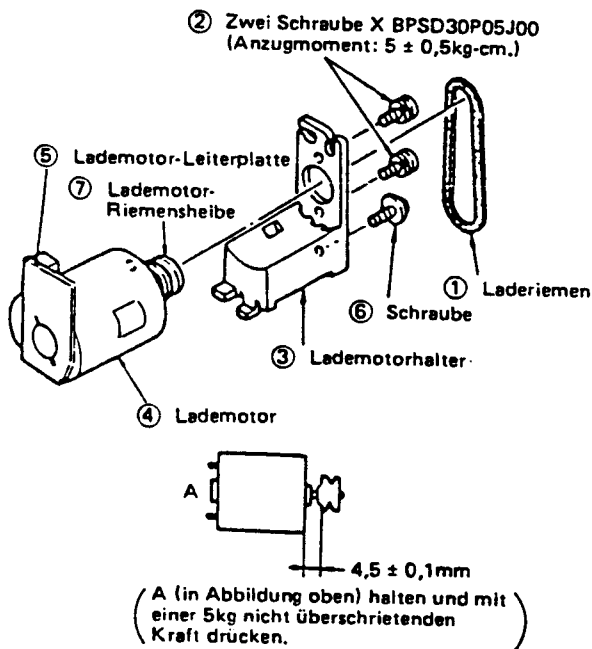


Abbildung 1-30.

AUSWECHSELN DES DIREKTANTRIEBSMOTORS

- **Ausbauen**

1. Die beiden Schrauben ① (SW3P + 55), mit denen die Direktantriebsrotoreinheit befestigt ist, mit Hilfe eines Kreuzschlitzschraubenziehers abschrauben.
2. Die Direktantriebsrotoreinheit entfernen, indem sie gerade herausgezogen wird.
3. Die Messingsschrauben ② (2,6P + 145), mit denen die Direktantriebsstatoreinheit befestigt ist, mit Hilfe eines Kreuzschlitzschraubenziehers abschrauben.
4. Die Direktantriebsstatoreinheit entfernen, indem sie gerade herausgezogen wird.

- **Einbauen**

1. Die Direktantriebsstatoreinheit auf die untere Trommel legen.
2. Den Direktantriebsstator mit den drei Messingschrauben ② (2,6P + 14S) befestigen und dazu einen Kreuzschlitzschraubenzieher verwenden.

Zur Beachtung:

Darauf achten, den Kern, die Wicklung oder das Hall-Element nicht zu verkratzen.

3. Die Direktantriebsrotoreinheit auf die Trommelachse setzen.

Zur Beachtung:

Die Einheit direkt in Richtung der Achse einsetzen. (Die Einsetzrichtung ist aus Abb. 1-31 ersichtlich.)

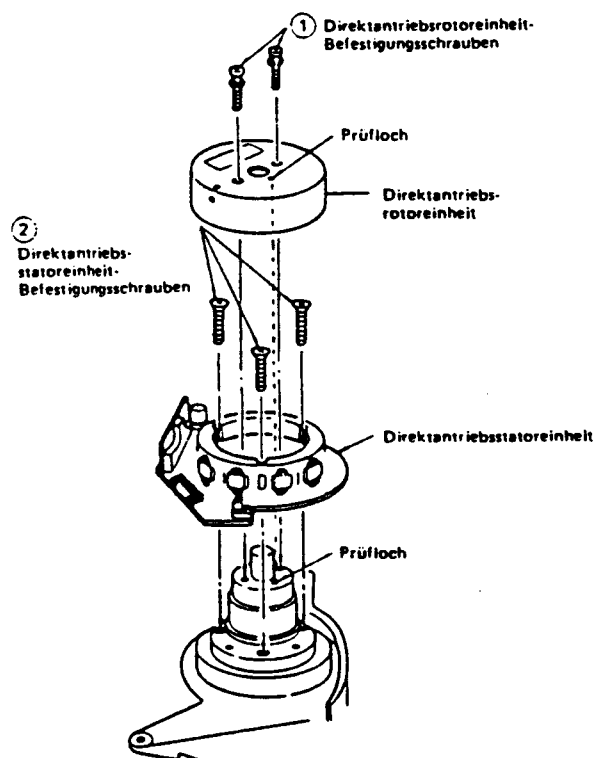
4. Die Direktantriebsrotoreinheit mit den Schrauben ① befestigen.

5. Die Direktantriebsrotoreinheit so befestigen, daß die Einbaupositionierungslöcher in der Direktantriebsrotoreinheit und in der unteren Trommel aufeinander ausgerichtet sind.

6. Nachdem der Direktantriebsmotor gemäß der obigen Beschreibung ausgewechselt worden ist, die Einstellung des Wiedergabe-Umschalt-punktes vornehmen.

Anmerkungen:

1. Darauf achten, die obere Trommel oder den Videokopf nicht zu beschädigen.
2. Darauf achten, daß das Hall-Element nicht durch die Direktrotoreinheit oder durch andere Teile beschädigt wird.



Anmerkung 1:
Die Direktantriebsrotor-Einheit so befestigen,
daß die Einbaupositionierungslöcher in der
Direktantriebsrotor-Einheit und der unteren Trommel
aufeinander ausgerichtet sind.

Abbildung 1-31.

EINSTELLUNG DER STROMKREISE

Vor der Einstellung:

Die meisten elektrischen Einstellungen sind erforderlich, nachdem mechanische Teile (einschließlich Videokopf) ausgewechselt worden sind. Vor dem Einstellen der Stromkreise sicherstellen, daß alle mechanischen Funktionen normal sind.

Für die elektrischen Einstellungen ist eine richtige Störungs-beseitigung erforderlich. Nach Ausführen von Reparaturarbeiten oder Auswechseln von Teilen können die folgenden Einstellungen erforderlich sein.

Zur Beachtung:

In den folgenden Tabellen sind die Meßinstrumente, Meßpunkte und Meßwerte angegeben.

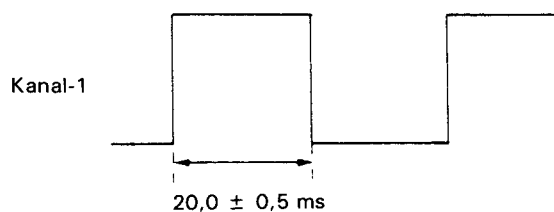
• EINSTELLUNG DER SERVOSCHALTUNG

Spurlagevoreinstell-MM-regler: R707

Oszilloskop	Kanal 1: TP701	Siehe Abbildung 2-1.
-------------	----------------	----------------------

(Interner Trigger: Seite (+) von Kanal 1)

1. Die Abgleichbandcassette (VROCPSV) in das Gerät einsetzen.
2. Das Band wiedergeben, und den Wiedergabe-Spurlage-regler auf die mittlere Raststellung einstellen.
3. R707 (Voreinstellregler) so einstellen, daß sich die gezeigte Wellenform ergibt.



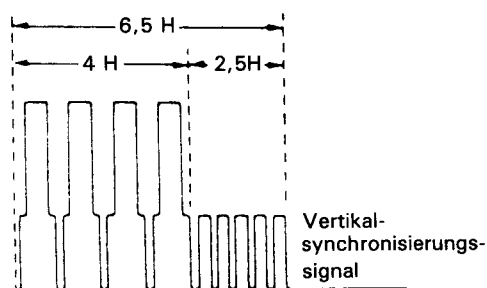
Vertikal; Kanal-1 2V/Teilung
Horizontal; 5 ms/Teilung

Abbildung 2-1.

Einstellung des Wiedergabe-Umschaltpunktes: R720

Oszilloskop	Kanal 1: TP703 Kanal 2: videoausgangsklemme	Siehe Abbildung 2-2.
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1. Die Abgleichbandcassette (VROCPSV) in das Gerät einsetzen.
2. Mit Hilfe der Impulstriggersteilheit (–) des Oszilloskops R720 (Um schalt-punkt) so einstellen, daß sich gemäß Abb. 2-2 eine Wellenform von $6,5 \pm 0,5 H$ ergibt.
3. Das Oszilloskop trennen.
4. Die Abgleichbandcassette entfernen.



(a) Umschalt-punkt (R720)

Abbildung 2-2.

• EINSTELLUNG DER Y/C-SCHALTUNG

Einstellung des E-E-Pegelregler: R253

Zur Beachtung:

Einen 75-Ohm-Widerstand zwischen Videoausgang und Masse anschließen.

Oszilloskop	Videoausgangsklemme	Siehe Abbildung 2-3.
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(Externer Trigger: TP2201 an der Hauptleiterplatte.)

1. Das Gerät auf die Aufnahme-Betriebsart einstellen.
2. Ein Farbbalkensignal dem Gerät zuleiten.
3. R235 (E-E-Pegelregler) so einstellen, daß sich die gezeigte Wellenform ergibt.
4. Den 75-Ohm-Widerstand trennen.

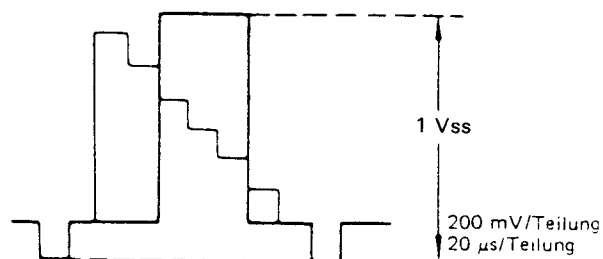


Abbildung 2-3.

Einstellung des Wiedergabe-Videosignal-Pegelreglers: R209

Zur Beachtung:

Einen 75-Ohm-Widerstand zwischen Videoausgang und Masse anschließen.

Oszilloskop	Videoausgangsklemme	Siehe Abbildung 2-4.
-------------	---------------------	----------------------

(Externer Trigger: TP2201)

1. Das Gerät auf die Wiedergabe-Betriebsart einstellen, und ein Abgleichband (VROCPSV) mit einer Farbbalken-Wellenform wiedergeben.
2. R209 (Wiedergabe-Pegelregler) so einstellen, daß sich die gezeigte Wellenform ergibt.
3. Den 75-Ohm-Widerstand trennen.

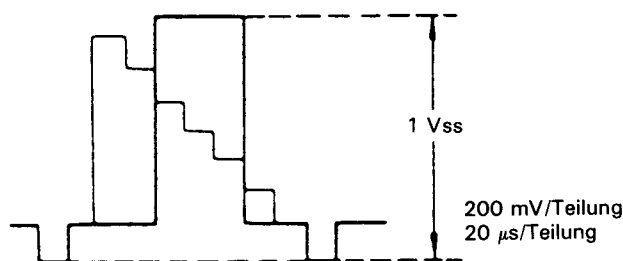


Abbildung 2-4.

Einstellung von FM 3,8 MHz und 4,8 MHz: R216, R222

1. R224 (Weißbegrenzungsregler) bis zum Anschlag entgegen dem Uhrzeigersinn drehen, um die Weißbegrenzung aufzuheben.
2. Sicherstellen, daß der E-E-Pegel und der Wieder-gabepegel innerhalb der vorgeschriebenen Werte eingeregelt sind.
3. Das Gerät auf die Aufnahme-Betriebsart einstellen.
4. Einen Frequenzzähler an den Stift ⑤ von IC201 anschließen, und R216 (FM-Trägerregler) so einstellen, daß der Zähler 3,8 MHz anzeigt.
5. Ein Farbbalkensignal dem Gerät zuleiten.
6. Das Oszilloskop (externer Trigger: TP2201) an den Videoausgang (75-Ohm-Klemme) anschließen. Wenn der automatische Aufnahme- und Wieder-gabepegel niedriger als 1,0 Vss ist, R222 (Hubregler) entgegen dem Uhrzeigersinn drehen; ist der Pegel höher als 1,0 Vss, R222 im Uhrzeigersinn drehen. Diesen Vorgang wiederholen, bis $1,00 \pm 0,05$ Vss angezeigt wird. (Siehe Abb. 2-3.)
7. Das normale Farbbalkensignal nicht mehr zuleiten, und einen Stiftstecker in die Eingangsbuchsen stecken, um diese kurzzuschließen. Einen Frequenzzähler an den Stift ⑤ von IC201 anschließen, und sicherstellen, daß der Zähler 3,8 MHz anzeigt.
8. Da die Weißbegrenzung im Schritt 1 aufgehoben worden ist, muß eine Neueinstellung vorgenommen werden.

Einstellung des Weißbegrenzungsreglers: R229

Oszilloskop	TP201	Siehe Abbildung 2-5.
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1. Das Gerät auf die Aufnahme-Betriebsart einstellen.
2. Ein Farbbalkensignal (treppenförmige Wellenform) dem Gerät zuleiten.
3. R229 (Weißbegrenzungsregler) so einstellen, daß sich die gezeigte Wellenform ergibt.

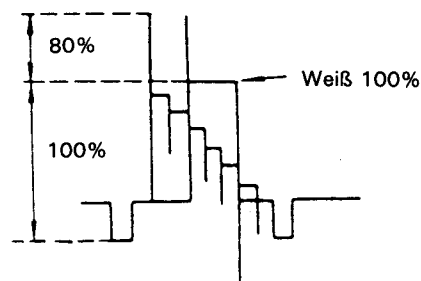


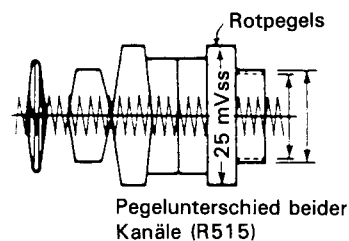
Abbildung 2-5.

Einstellung der FM-Aufnahmeschaltung: R263, R515

Zweistrahlo- Oszilloskop	Masse: TP-32 Kanal-1-Signal: TP-31 (an der Kopfverstärker- Leiterplatte)	25 mVss (Ab- bildung 2-6) 140 mVss (Ab- bildung 2-7)
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(External Trigger: TP2201. Die Erdklemme des externen Triggers sollte nicht an Mass gelegt werden.)

1. Das Gerät auf die Aufnahme-Betriebsart einstellen.
2. Ein Farbbalkensignal dem Gerät zuleiten.
3. Die Erdklemme des Zweistrahlo-Oszilloskops mit TP-32 und das Kanal-1-Signal mit TP-31 verbinden. TP-31 und TP-32 befinden sich an der Kopfverstärker-Leiterplatte.
4. R515 (Aufnahme-FM-Pegelregler) ganz zurückdrehen.
5. R515 (Aufnahme-Chromapegelregler) so einstellen, daß der Rotsignalausgang 25 mVss beträgt. (Siehe Abb. 2-6.)
6. R263 (Aufnahme-FM-Pegelregler) so einstellen, daß der Synchronboden 140 mVss beträgt. (Siehe Abb. 2-7.)



Pegelunterschied beider Kanäle (R515)

Abbildung 2-6.

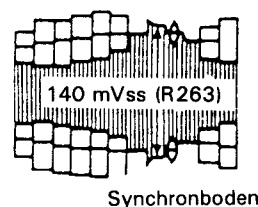


Abbildung 2-7.

Einstellung der automatischen Phasenregelung: R507

Frequenz- zähler	Y/C-Leiterplatten- Steckverbinder, 12-polig	4,433619 MHz ± 10 Hz
---------------------	---	-----------------------------

1. Die Abgleichbandcassette (VROCPSV) in das Gerät einsetzen.
2. R507 so einstellen, daß die Frequenz 4,433619 Mhz ± 10 Hz beträgt.

• EINSTELLUNG DER TONSCHALTUNG

Einstellung des Wiedergabe-Ausgangspegelreglers: R609 (an der Ton-Leiterplatte)

Röhren- voltmeter	Tonausgangs- buchse	- 8 dBm $\pm 0,5$ dBm
----------------------	------------------------	--------------------------

1. Ein Abgleichband (VROCPSV) mit 1 kHz-Signal für Pegeleichung wiedergeben.
2. R609 (Wiedergabe-Pegelregler) so einstellen, daß sich der angegebene Ausgangspegel ergibt.

Überprüfung der Löschspannung/Schwingungs- frequenz

Oszilloskop Frequenzzähler	Beide Klemmen des Volllösch- kopfes	40 Vss 70 kHz ± 7 kHz (Abb. 2-8)
-------------------------------	---	--

1. Das Gerät auf die Aufnahme-Betriebsart einstellen.
2. Sicherstellen, daß die Löschspannung mehr als 40 Vss beträgt.
3. Sicherstellen, daß die Schwingungsfrequenz 70 kHz ± 7 kHz beträgt.

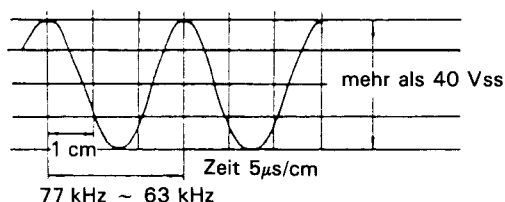


Abbildung 2-8.

Einstellung des Vormagnetisierungsstroms: R622

Röhren- voltmeter	MASSE: TP602 SIGNAL: TP601	2,2 mV $\pm 0,1$ mV (220 ± 10 μ A)
----------------------	-------------------------------	---

1. Das Gerät auf die Aufnahme-Betriebsart einstellen.
2. R622 (Vormagnetisierungsstromregler) so einstellen, daß sich der angegebene Vormagnetisierungsstrom ergibt.

Überprüfung des Aufnahmepegels

Röhren- voltmeter	Tonausgangs- buchse	- 3.8 dBm (500 mVrms) ± 3 dBm
----------------------	------------------------	---

1. Ein Signal von 1 kHz, - 3.8 dBm (500mVrms) der Toneingangsbuchse zuleiten, und eine Aufnahme bzw. Wiedergabe durchführen.
2. Sicherstellen, daß der Signalpegel an der Tonausgangsbuchse während der Wiedergabe-Betriebsart - 3.8 ± 3 dBm beträgt.
3. Wenn der Pegel nicht erreicht wird, die Einstellung einmal vornehmen.

• EINSTELLUNG DES BILDSCHIRM-AN- ZEIGESCHALTKREISES (OSD)

Das Bildschirmanzeigesystem (OSD) ist dafür eingebaut, um die Uhrzeit, Programmnummer, Kanal, Woche/Tag, Anfangszeit und Dauer auf dem Bildschirm anzuzeigen, obwohl die erwähnten Werte auf der Timer-Leuchtanzeige erscheinen.

Einstellung des Farbsynchronsignals

1. In den OSD-Modus bringen.
2. Den Frequenzzähler am TP-2701 (Signal) und TP-2702 (Masse) an der Digital-Leiterplatte (B) anschließen und den Trimmer C5911 (an der OSD-Leiterplatte) einsetzen, um 44,3362 MHz ± 20 Hz zu erhalten.

Laterale Position von Programmzeichen

Nach Einstellen auf den OSD-Modus den Programminhalt am Bildschirm darstellen und den Trimmer C5904 (an der OSD-Leiterplatte) so einstellen, daß die Programmzeichen (Programmnummer, Kanal, Woche/Tag, Anfangszeit und Dauer) richtig am Bildschirm angeordnet sind.

Einstellung: Digital (A) K2648HE

1. Entweder auf HF-Empfang oder Eingang von Videosignalen einstellen.
2. Die Taste STROBO von R/C stellen, um so die Betriebsart EE STROBO einzustellen.
3. Das Oszilloskop an TP2801 anschließen und danach C2804 (Read Clock ADJ) (Schreibuhreinstellung) so einstellen, daß die Hüllkurve 50% beträgt (siehe Abb. 2-9).
Oszilloskop: IV/DEV, 0,5 μ sec/DIV
INT, NORMAL, Gleichstrom, Flanke (-)
4. Das Oszilloskop an TP2802 anschließen und danach C2810 (Read Clock ADJ) (Schreibuhreinstellung) so einstellen, daß die Hüllkurve 50% beträgt (siehe Abb. 2-9).

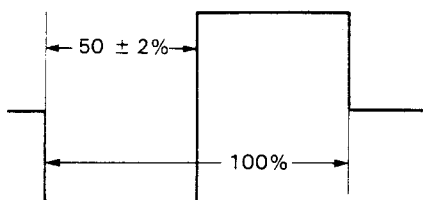


Abbildung 2-9.

Einstellung von D:G (B)

1. Den Kanalschalter (CHANNEL) auf Betriebsart AV (AUX) stellen, so daß kein Signaleingang in den Videoeingang VIDEO IN erfolgt.
2. Den Farbmodusschalter (COLOR MODE) auf Aus (OFF) stellen (Blue Mute OFF) (Blauunterdrückung Aus).
3. Den Stecker "SH" herausziehen.
4. Den Frequenzzähler an Pin 4 (4.43 MHz) des Steckers "SH" anschließen und danach C2609 (OSC ADJ 2) so einstellen, daß sich ein Zählwert von $4433,62 \pm 0,2$ kHz ergibt. Zähler-Massenstufe (GND) ist Pin 3 des Steckers "SH".
5. Den Frequenzzähler an TP2701 (4,43 MHz) (GND ist TP2702) anschließen und danach C2727 (OSC ADJ 1) so einstellen, daß sich ein Zählwert von $4433,62 \pm 0,2$ kHz ergibt.
6. PAL-Farbbalkensignale in den Videoeingang VIDEO IN eingeben.
7. Die STROBO-Taste von R/C zum Einstellen der Betriebsart EE STROBO drücken.
8. Das Oszilloskop an Pin 1 (B-Y) von Stecker "SH" anschließen (GND ist Pin 3 von "SH").
 - (8-1) R2631 (Burstreinigung) einstellen, bis Abschnitt A, gezeigt in Abb. 2-10, auf ein Minimum reduziert ist.
 - (8-2) R2619 (1H GAIN) einstellen, bis der in Abb. 2-10 gezeigte Spalt in Abschnitt B (gepunktete Linie) auf ein Minimum reduziert ist.
 - (8-3) L2601 (1H PHASE) einstellen, bis der in Abb. 2-10 gezeigte Spalt in Abschnitt C auf ein Minimum reduziert ist.
 - (8-4) Abwechselnd die unter (8-1) bis (8-3) beschriebenen Einstellungen zwei- oder dreimal durchführen, bis die von der durchgehenden Linie in Abb. 2-10 angezeigte Hüllkurve geformt ist.

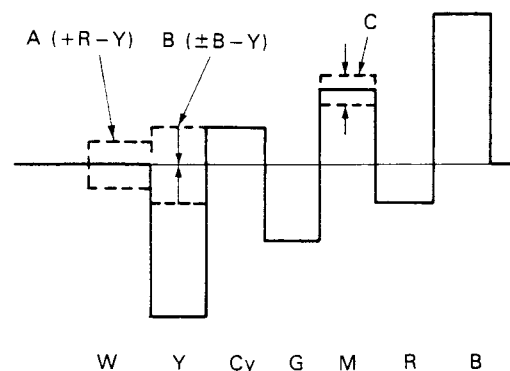


Abbildung 2-10. Hüllkurve B-Y

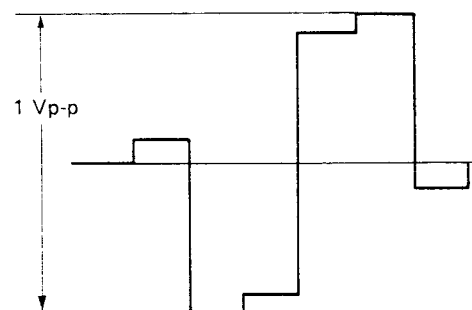


Abbildung 2-11. Hüllkurve R-Y

9. Das Oszilloskop an Pin 2 (R-Y) des Steckers "SH" anschließen und danach R2601 (Farbstufe) auf eine Hüllkurvenamplitude von 1 Vp-p einstellen.
10. Stecker "SH" einstecken.
11. Das Oszilloskop an den Videoausgang anschließen und R2709 (Übertragungsausgleich R-Y) und R2710 (Übertragungsausgleich B-Y) abwechselnd zwei- oder dreimal einstellen, bis das in Abb. 2-12 gezeigte weiße Rauschen auf ein Minimum reduziert ist.

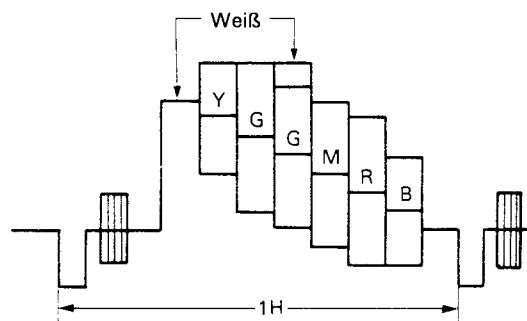


Abbildung 2-12. Videoausgangshüllkurve

• Demodulationsschaltung H-S

PLL-Frequenzeinstellung: R1464

1. Den Frequenzzähler an Pin fosc von TP1451 anschließen, nach Passieren des in der linken Abbildung gezeigten Puffers.
2. 1μ (50V), wie in der Abbildung gezeigt, zwischen Pin 5 von IC 1452 von TP1451 und dem GND-Pin von TP1451 anschließen. (Den Anschluß nach beendeter Einstellung den entfernen.)
3. R1464 so einstellen, daß der Wert in der Zähleranzeige 15,625 kHz zeigt.

Innerhalb ± 50 Hz

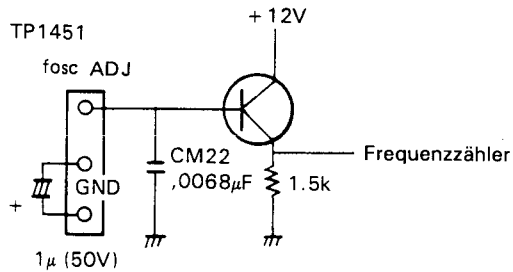


Abbildung 2-13.

DIGITAL(A) F2648GE

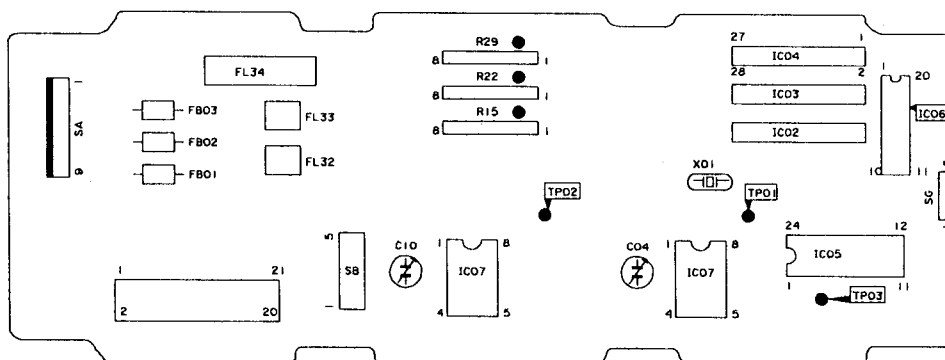


Abbildung 2-16 Digital (A) Schaltung

DIGITAL(B) F2649GE

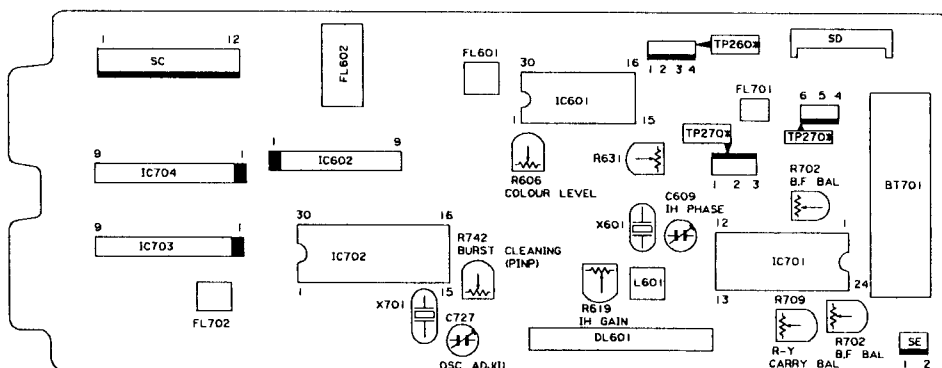


Abbildung 2-17 Digital (B) Schaltung

FEHLERSUCHTABELLE


• STÖRUNGEN DES STEUERUNGSSYSTEMS (SERVO-, SYSTEMSTEUERUNGSSCHALTUNG)

Nr.	Störungen	Mögliche Ursachen und Abhilfe
1.	Kein Strom wird zugeführt.	<ul style="list-style-type: none"> Die Sicherung ist durchgebrannt. Nachprüfen, ob in der inneren Schaltung ein Kurzschluß vorhanden ist. Nachprüfen, ob im Hauptstromkreis Spannungen von AT5V, UR (nicht stabilisiert) 15V und AT9V erzeugt werden. Ist dies nicht der Fall, bedeutet dies, daß der Hauptstromkreis defekt ist. Nachprüfen, ob die System-Steuereinheit (IC801) normal funktioniert. Nachprüfen, ob am Stift ④⑤ von IC801 Rückstellsignale und an den Stiften ④⑥ und ④⑦ von IC801 Taktsignale erzeugt werden. Nachprüfen, ob das (niederpegelige) Stromversorgungs-Steuersignal vom Stift ④⑨ von IC801 abgeleitet wird.
2.	Kein Betrieb ist möglich.	<ul style="list-style-type: none"> Nachprüfen, ob die Startsensordesignale (Cassettengehäuseseite) und Endsensordesignale den Stiften ④① und ④② von IC801 zugeleitet werden. Nachprüfen, ob sich das Gerät in der Zeitschaltuhr-Betriebsart befindet. Nachprüfen, ob sich das Gerät in der Sensorstopp-Betriebsart befindet. Der Nockenschalter ist nicht richtig eingestellt.
3.	Nach dem Bandladen schaltet sich das Gerät aus, während das Band um die Trommel gewickelt bleibt bzw. die Cassette kann nicht ausgeworfen werden.	<ul style="list-style-type: none"> Der Nockenschalter ist nicht richtig eingestellt. IC802 ist defekt.
4.	Das Gerät schaltet sich unmittelbar nach Einstellung auf die Wiedergabe- oder Aufnahme-Betriebsart aus.	<ul style="list-style-type: none"> Nachprüfen, ob der Kopfumschaltimpuls dem Stift ③ (für den Trommelsensor) von IC801 zugeleitet wird. Nachprüfen, ob sich der Trommelmotor dreht. Nachprüfen, ob das Signal des Trommelimpuls-generators dem Stift ⑦ der Servoschaltung IC701 zugeleitet wird.
5.	Das Gerät schaltet sich einige Sekunden nach Einstellung auf die Wiedergabe- oder Aufnahme-Betriebsart aus.	<ul style="list-style-type: none"> Nachprüfen, ob der Spulenimpuls dem Stift ④③ (für den Spulensensor) von IC801 zugeleitet wird. Nachprüfen, ob sich der Antriebsmotor dreht. Nachprüfen, ob das Spulenzwischenrad verschmutzt oder defekt ist.
6.	Das Band läuft nicht. (Das Band wird nicht aufgespult.)	<ul style="list-style-type: none"> Das Spulenzwischenrad ist defekt. Die Spulenbremse ist defekt.

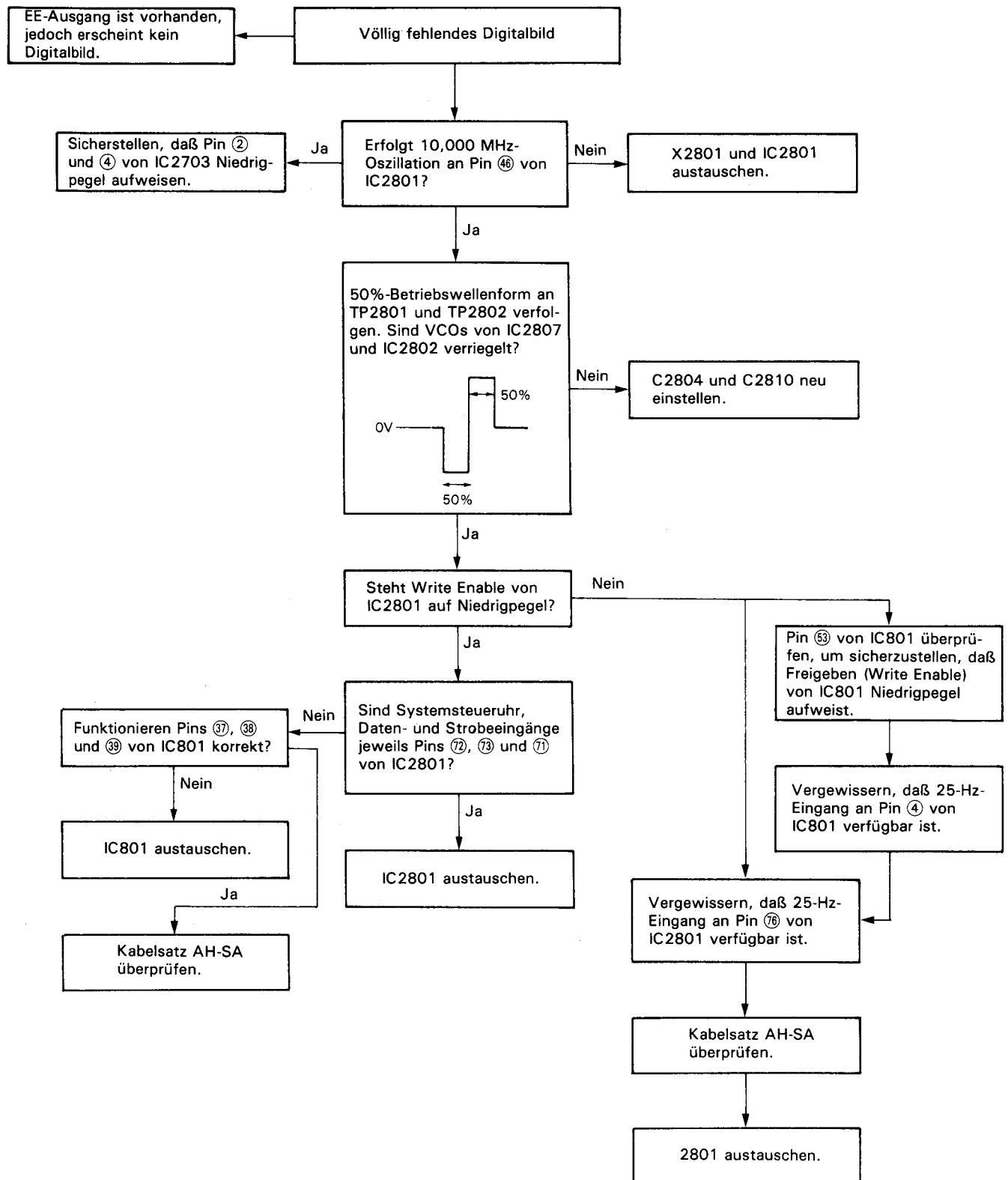
Nr.	Störungen	Mögliche Ursachen und Abhilfe
7.	<ul style="list-style-type: none"> Das Gerät schaltet sich manchmal bei Wiedergabe oder Aufnahme aus. Das Band wird beim Entladen nicht aufgespult. Das Band wird beim Umspulen verkratzt. Bildsuchlauf ist nicht möglich. 	<ul style="list-style-type: none"> Nachprüfen, ob an der System-Steuereinheit die folgenden Antriebsmotor-Steuersignale erzeugt werden: Servo-Abtastsignal am Stift ③⑥ von IC801, Servo-Taktsignal am Stift ③⑦ von IC801, Servo-Datensignal am Stift ③⑧ von IC801, Bandantriebs-Anzugssignal am Stift ②⑧ von IC801, Bandantriebsmotor-Entladesignal am Stift ②⑨ von IC801, Cassettenmotor-Steuersignal am Stift ⑥② von IC801, Lademotor-Steuersignal am Stift ⑥③ von IC801, Cassetten- und Lademotor-Rücklaufsteuersignal am Stift ⑧ von IC801. Die Bildsuchlaufschaltung ist defekt. IC701, IC702 und IC803 sind defekt.
8.	Das Wiedergabebild ist etwas gestört.	<ul style="list-style-type: none"> Der Wiedergabe-Phasenregler (R720) ist falsch eingestellt. Der Spurlagevoreinstellregler (R707) ist falsch eingestellt.
9.	Das Wiedergabebild ist zeitweilig gestört.	<ul style="list-style-type: none"> Die Bandantriebs-Servoschaltung (Signal des Bandantriebsmotor-Frequenzgenerator am Stift ①④ von IC702 und Wiedergabe-Steuersignal am Stift ① von IC702) überprüfen.
10.	Das Bild fällt in Horizontalrichtung zusammen.	<ul style="list-style-type: none"> Die Trommel-Servoschaltung ist defekt. Nachprüfen, ob das Signal des Trommel-Frequenzgenerators dem Stift ⑥ von IC701 und das Signal des Trommel-Impulsgenerators dem Stift ⑦ von IC701 zugeleitet wird. Nachprüfen, ob das Bezugssignal (4,43 MHz) am Stift ① von IC701 vorhanden ist.

• TON- UND WIEDERGABEBILDSTÖRUNGEN (Y/C- UND TONSCHALTUNG)

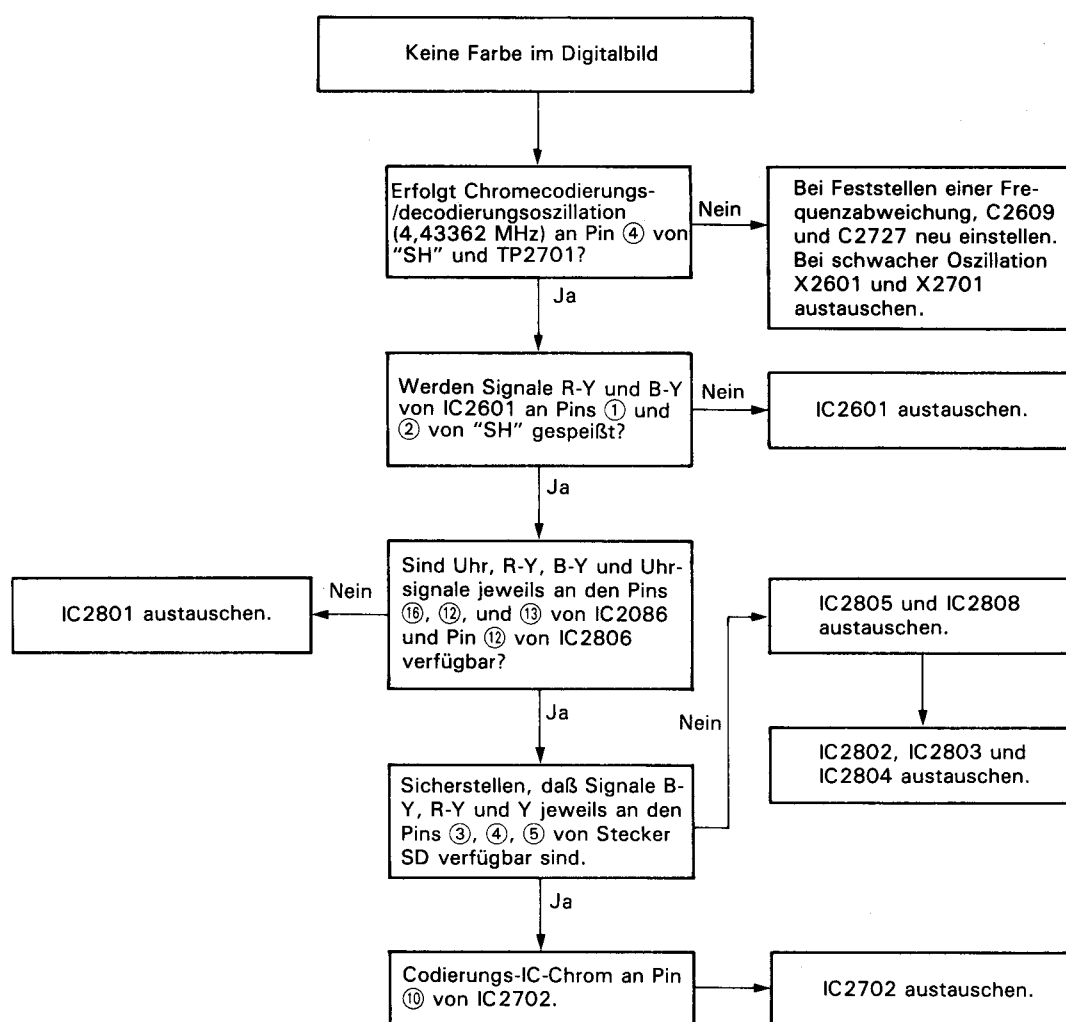
Nr.	Störungen		Mögliche Ursachen und Abhilfe
1.	Kein Bilderscheint.	In der E-E-Betriebsart	<ul style="list-style-type: none"> Nachprüfen, ob das Videosignal (E-E-Signal) dem Stift ② von IC201 zugeleitet, das Videosignal vom Stift ②⑨ abgeleitet und die richtige Spannung jedem Stift von IC201 zugeleitet wird.
		Bei Wiedergabe eines normalen Bandes	<p>Sicherstellen, daß in der E-E-Betriebsart ein normales Bild erscheint.</p> <ul style="list-style-type: none"> Nachprüfen, ob das Wiedergabe-FM-Signal dem Stift ①⑩ von IC201 zugeleitet wird. Nachprüfen, ob das Wiedergabe-FM-Signal den Stiften ①⑨ und ②⑩ von IC301 zugeleitet wird.
		Bei Wiedergabe eines selbst aufgezeichneten Bandes	<p>Vor dieser Überprüfung sicherstellen, daß ein Normalband normal wiedergegeben werden kann.</p> <ul style="list-style-type: none"> Nachprüfen, ob das FM-Signal am Stift ① von IC201 vorhanden ist. Nachprüfen, ob das Videosignal am Stift ③⑨ von IC201 vorhanden ist. Nachprüfen, ob das Videosignal am Stift ②⑨ von IC201 vorhanden ist.

Nr.	Störungen	Mögliche Ursachen und Abhilfe
2.	Keine Farbe erscheint.	<ul style="list-style-type: none"> • Nachprüfen, ob das Chromasignal am Stift ③① von IC501 vorhanden ist. • Nachprüfen, ob die Phasenregelautomatik falsch eingestellt ist (R507). Ist eine Neueinstellung nicht möglich, bedeutet dies, daß IC501 defekt ist. • Nachprüfen, ob IC501 normal funktioniert.
3.	Das Bild fällt zusammen, wenn ein selbst aufgezeichnetes Band wiedergegeben wird. <div data-bbox="392 573 584 663" style="text-align: center;">  </div>	<ul style="list-style-type: none"> • Nachprüfen, ob die Spannung an den einzelnen Stiften des Kopfverstärkers normal ist.
4.	Störungen erscheinen auf dem ganzen Bild, wenn ein selbst aufgezeichnetes Band wiedergegeben wird.	<ul style="list-style-type: none"> • Nachprüfen, ob die Spannung an den einzelnen Stiften des Kopfverstärkers normal ist. • Den Videokopf reinigen oder durch einen neuen ersetzen.
5.	Störungen sind in der E-E-Betriebsart oder bei Wiedergabe eines selbst aufgezeichneten Bandes bemerkbar.	<ul style="list-style-type: none"> • Der Tuner und/oder HF-Wandler sind defekt.
6.	Störung erscheint auf dem Bild, wenn ein Normalband wiedergegeben wird.	<ul style="list-style-type: none"> • Den Videokopf reinigen oder durch einen neuen ersetzen.
7.	Kein E-E-Ton ist zu hören.	<ul style="list-style-type: none"> • Die Pegelregelautomatik bei IC601 funktioniert nicht richtig. • Nachprüfen, ob das Tonsignal am Stift ①⑥ von IC601 vorhanden ist. • Die Tonstummenschaltung ist defekt.
8.	In der Wiedergabe-Betriebsart ist kein Ton zu hören.	<ul style="list-style-type: none"> • Der Tonkopf ist defekt. • Nachprüfen, ob das Wiedergabe-Tonsignal dem Stift ⑦ von IC601 zugeleitet und vom Stift ①⑥ abgeleitet wird.
9.	Der Klang ist verzerrt.	<ul style="list-style-type: none"> • Der Tonkopf ist aufmagnetisiert oder defekt. • Der Vormagnetisierungsstrom ist unzureichend.
10.	Die Resonanz ist bei Aufnahme oder Wiedergabe nicht einwandfrei.	<ul style="list-style-type: none"> • Der Tonkopf ist aufmagnetisiert oder defekt. • Die Vormagnetisierungs-Oszillatorschaltung ist defekt.
11.	Aufnehmen ist nicht möglich.	<ul style="list-style-type: none"> • Die Vormagnetisierungs-Oszillatorschaltung funktioniert nicht normal.
12.	Bei Wiedergabe oder Aufnahme sind häufig Störgeräusche oder Brummen zu hören.	<ul style="list-style-type: none"> • Der Tonkopf ist defekt.

DIGITALSPEICHER (1) FEHLERSUCHE



DIGITALSPEICHER (2) FEHLERSUCHE



SCHEMATIC DIAGRAM / SCHALTPLAN

IMPORTANT SAFETY NOTICE:

BE SURE TO USE GENUINE PARTS FOR SECURING THE SAFETY AND RELIABILITY OF THE SET.

PARTS MARKED WITH "△" AND PARTS SHAD-ED (IN BLACK) ARE ESPECIALLY IMPORTANT FOR MAINTAINING THE SAFETY AND PROTECTING ABILITY OF THE SET.

BE SURE TO REPLACE THEM WITH PARTS OF SPECIFIED PART NUMBER.

WICHTIGER SICHERHEITSHINWEISE:

IM INTERESSE DER SICHERHEIT UND ZUVERLÄSSIGKEIT SOLLTEN DIE ORIGINALTEILE IMMER VERWENDET WERDEN.

DIE MIT "△" BEZEICHNETEN BZW. (SCHWARZ) GESCHATTETEN TEILE SIND BESONDERS WICHTIG SOWHOL FÜR DIE SICHERHEIT ALS AUCH FÜR DIE SICHERE LEISTUNG.

BEIM AUSTAUSCH BITTE IMMER DIE TEILE, WIE VON DEN NUMMERN VORGESCHRIEBEN, VERWENDEN.

SAFETY NOTES:

1. DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.
2. SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.

SICHERHEITSHINWEISE:

1. VOR AUSWECHSELN VON TEILEN DEN NETZKABEL-STECKER AUS DER NETZSTECKDOSE ZIEHEN.
2. KÜHLKÖRPER VON HALBLEITERN SOLLTEN BEI BETRIEB DES CHASSIS ALS MÖGLICHE URSACHEN ELEKTRISCHER SCHLÄGE BETRACHTET WERDEN.

NOTES:

1. The unit of resistance "ohm" is omitted ($k = 1000 \text{ ohm}$, $M = 1 \text{ Meg ohm}$).
2. All resistors are 1/8 watt, unless otherwise noted.
3. The unit of capacitance "F" is omitted ($\mu = \mu\text{F}$, $p = p\mu\text{F}$).

VOLTAGE MEASUREMENT CONDITIONS:

1. DC voltages are measured between points indicated and chassis ground by VTVM, with AC220V/50Hz supplied to unit and all controls are set to normal viewing picture unless otherwise noted.
2. Voltages are measured with 10000 μV B & W or colour signal.

WAVEFORM MEASUREMENT CONDITIONS:

10000 μV 87.5 percent modulated colour ber signal is fed into tuner:

ANMERKUNGEN:

1. Die Widerstandseinheit "Ohm" wird weggelassen ($k = 1000 \text{ Ohm}$, $M = 1 \text{ Megohm}$).
2. Alle Widerstände haben 1/8 Watt, sofern nicht anders angegeben.
3. Die Kapazitätseinheit "F" wird weggelassen ($\mu = \mu\text{F}$, $P = p\mu\text{F}$).

SPANNUNGSMESSBEDINGUNGEN:

1. Gleichspannungen werden zwischen den angegebenen Punkten und der Chassis mit Hilfe eines Röhrenvoltmeters gemessen, wobei dem Gerät 220 V Netzstrom (50 Hz) zugeführt wird und alle Bedienungselemente auf ein normales Bild eingestellt sind, sofern nicht anders angegeben.
2. Spannungen werden mit einem 10000 μV V-Schwarzweißoder Farbsignal gemessen.

WELLENFORMMESSBEDINGUNGEN:

Ein um 87,5% moduliertes 10000 μV -Farbbalkensignal wird dem Tuner zugeleitet.

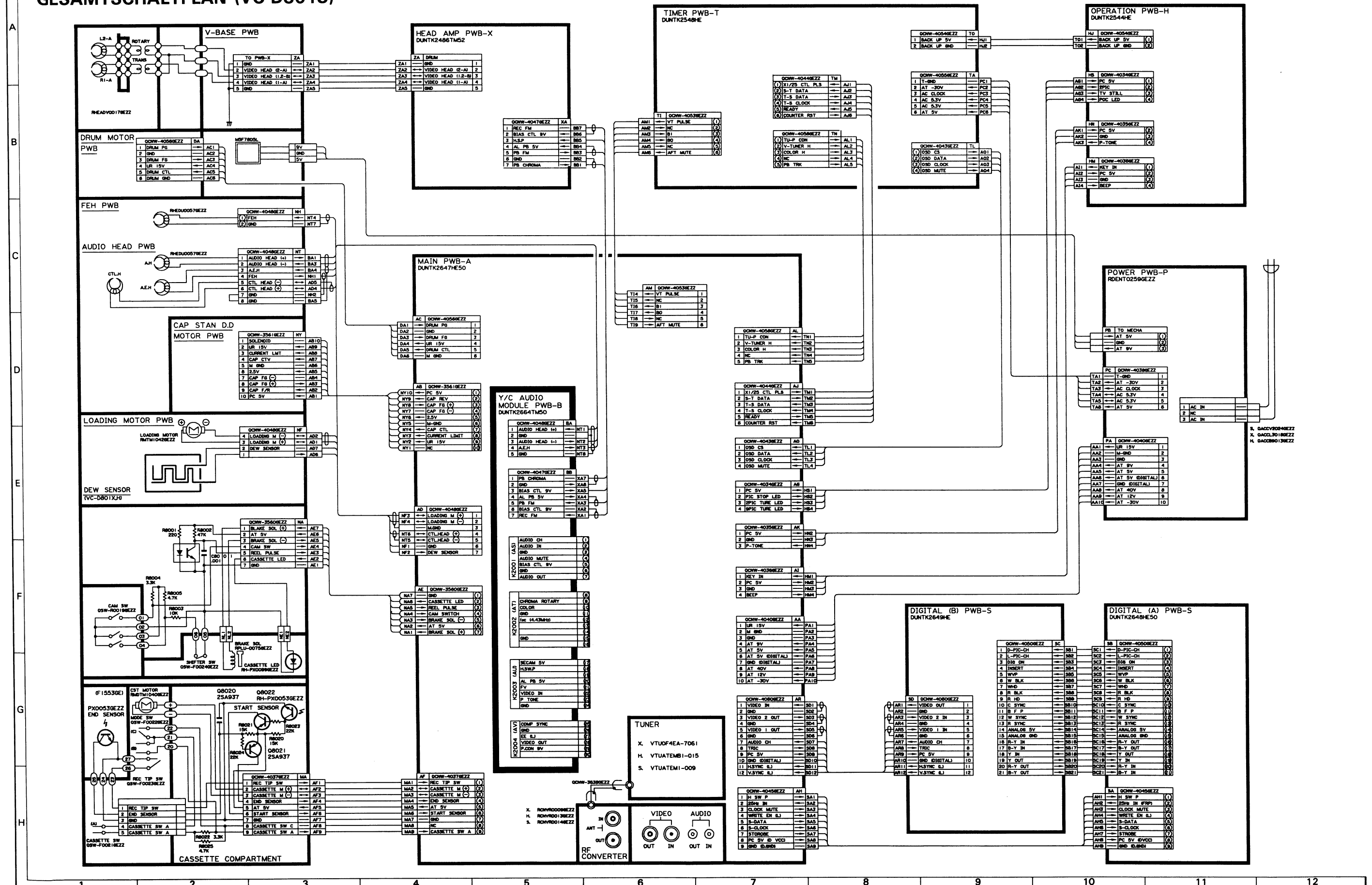
CAUTION:

This circuit diagram is original one. Therefore there may be a slight difference from yours.

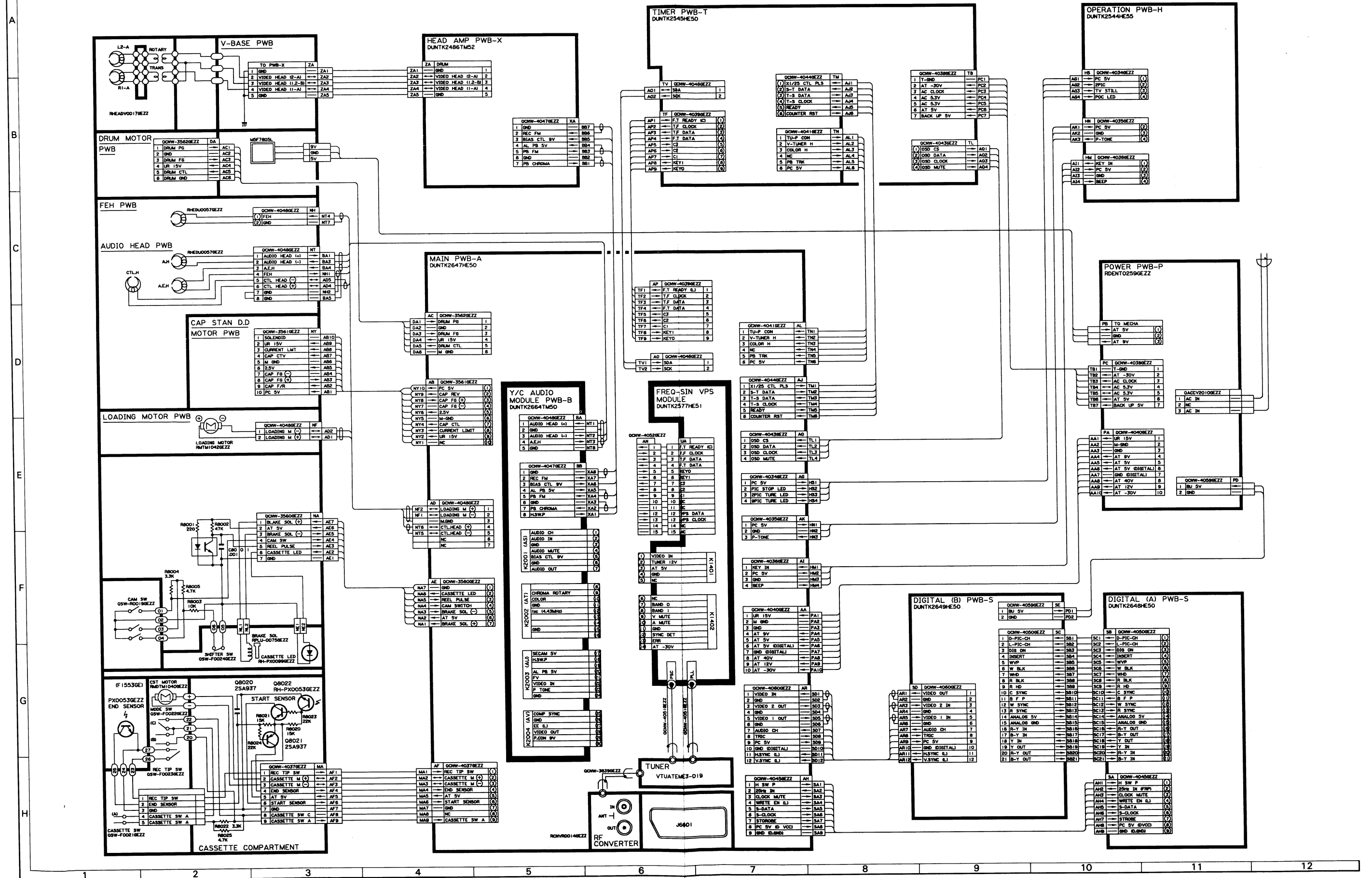
ANMERKUNG:

Dieses Leitungsschema ist das originale. Daher kann es von ihrem Leitungsschema etwas verschieden sein.

OVERALL SCHEMATIC DIAGRAM (VC-D801S) GESAMTSCHALTPLAN (VC-D801S)

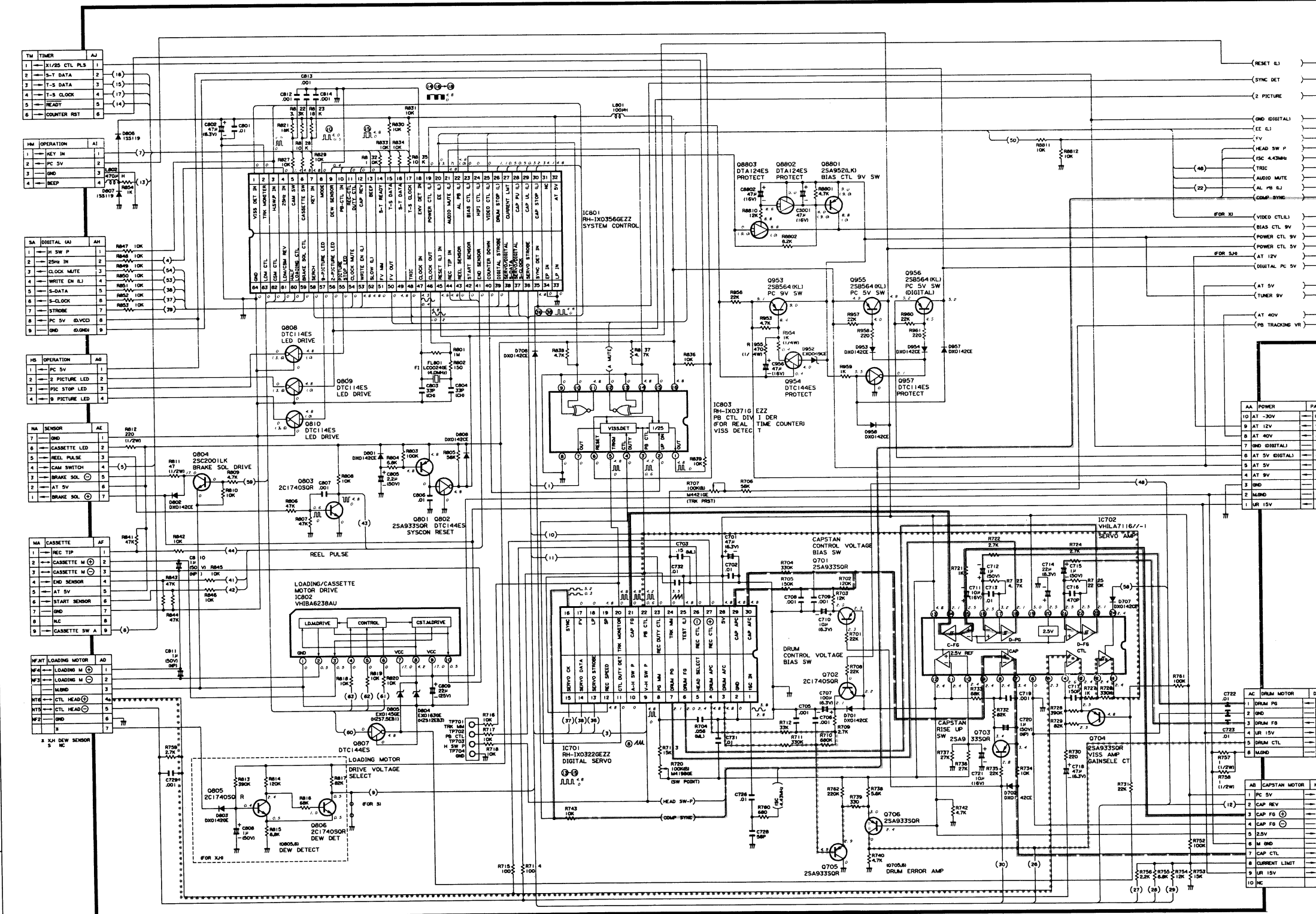


OVERALL SCHEMATIC DIAGRAM (VC-D802G)
GESAMTSCHALTPLAN (VC-D802G)



PWB-A, SYSTEM CONTROL, SERVO CIRCUIT SCHEMATIC DIAGRAM (MAIN 1) (VC-D801S)
LEITERPLATTE A, SCHEMATISCHER SCHALTPLAN DER SYSTEMSTEUERUNG, SERVOSCHALTUNG (HAUPTLEIT 1)
(VC-D801S)

DUNTK2647HE



Capstan frequency reference signal
Antriebsachsen-Frequenzbezugssignal

Capstan control signal
Antriebsachsen-Steuersignal

Capstan phase reference signal
Antriebsachsen-Phase-Vergleichssignal

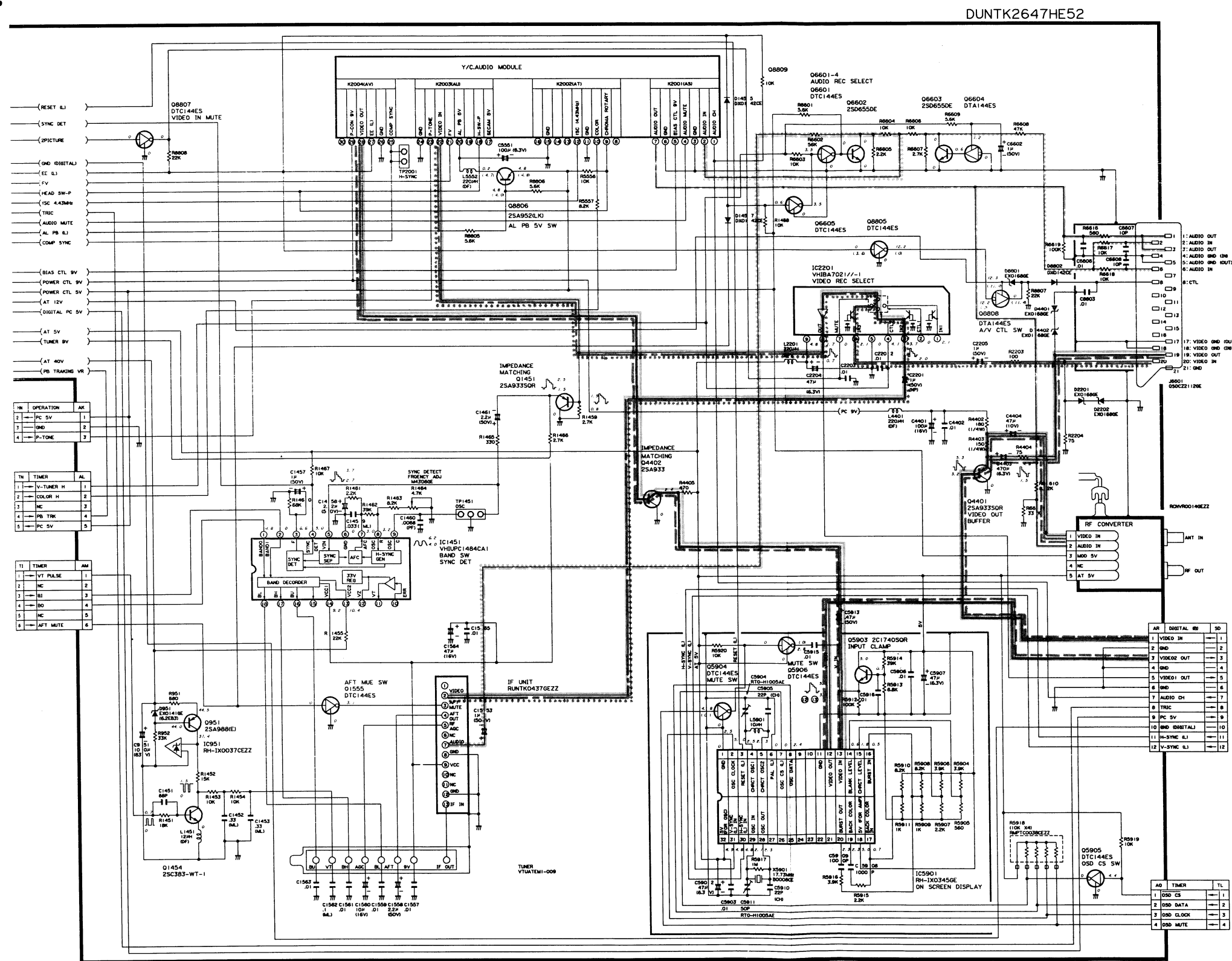
Drum phase reference signal
(Playback mode)
Trommel-Phase-Vergleichssignal
(Wiedergabe-Betriebsart)

Drum frequency reference signal
Trommel-Frequenzbezugssignal

Drum control signal
Trommel-Steuersignal

Record reference signal
Aufzeichnungs-Bezugssignal

PWB-A, SYSTEM CONTROL, SERVO CIRCUIT SCHEMATIC DIAGRAM (MAIN 2) (VC-D801S)
LEITERPLATTE A, SCHEMATISCHER SCHALTPLAN DER SYSTEMSTEUERUNG, SERVOSCHALTUNG (HAUPTLEIT 2)
(VC-D801S)



Playback chrominance signal
Wiedergabe-Chrominanzsignal

Playback luminance signal
Wiedergabe-Luminanzsignal

Record chrominance signal
Aufzeichnungs-Chrominanzsignal

Record luminance signal
Aufzeichnungs-Luminanzsignal

Video E-E signal
Video E-E Signal

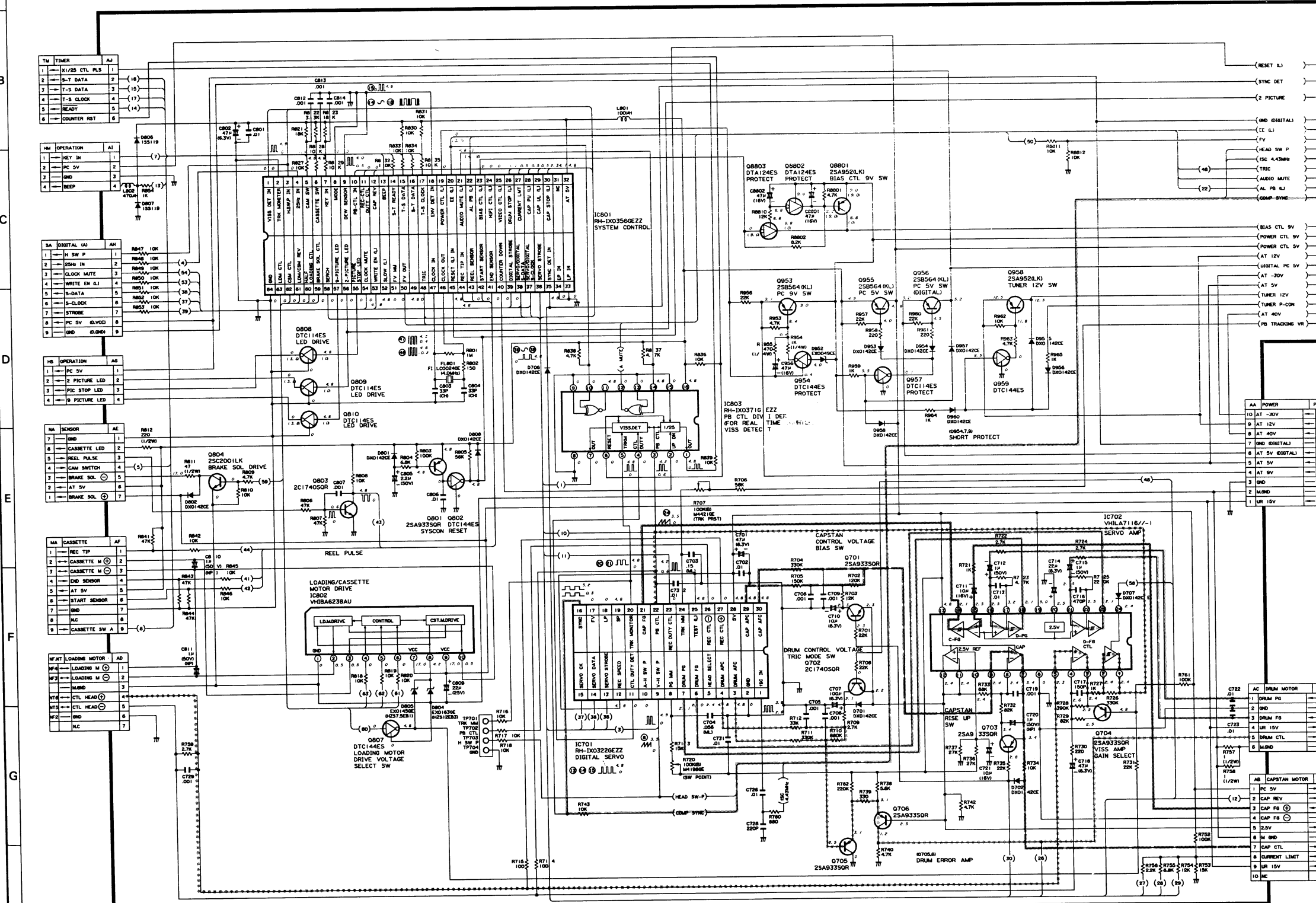
Audio E-E signal
Ton-EE Signal

Audio record signal
Tonaufzeichnungssignal

Audio playback signal
Ton-Wiedergabesignal

PWB-A, SYSTEM CONTROL, SERVO CIRCUIT SCHEMATIC DIAGRAM (MAIN 1) (VC-D802G)
LEITERPLATTE A, SCHEMATISCHER SCHALTPLAN DER SYSTEMSTEUERUNG, SERVOSCHALTUNG (HAUPTLEIT 1)
(VC-D802G)

DUNT2647HE50



Capstan frequency reference signal
Antriebsachsen-Frequenzbezugssignal

Capstan control signal
Antriebsachsen-Steuersignal

Capstan phase reference signal
Antriebsachsen-Phase-Vergleichssignal

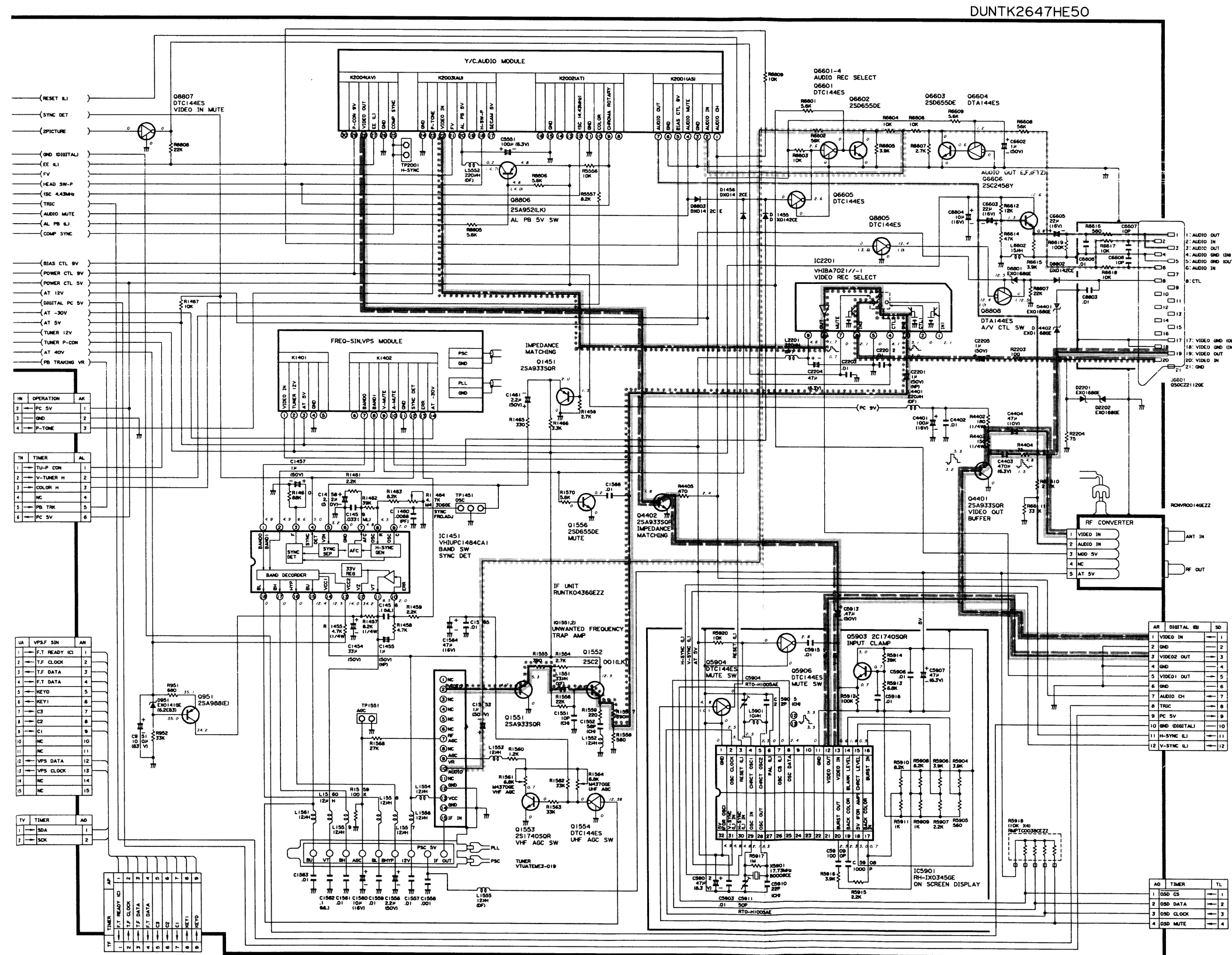
Drum phase reference signal
(Playback mode)
Trommel-Phase-Vergleichssignal
(Wiedergabe-Betriebsart)

Drum frequency reference signal
Trommel-Frequenzbezugssignal

Drum control signal
Trommel-Steuersignal

Record reference signal
Aufzeichnungs-Bezugssignal

PWB-A, SYSTEM CONTROL, SERVO CIRCUIT SCHEMATIC DIAGRAM (MAIN 2) (VC-D802G)
LEITERPLATTE A, SCHEMATISCHER SCHALTPLAN DER SYSTEMSTEUERUNG, SERVOSCHALTUNG (HAUPTLEIT 2) (VC-D802G)



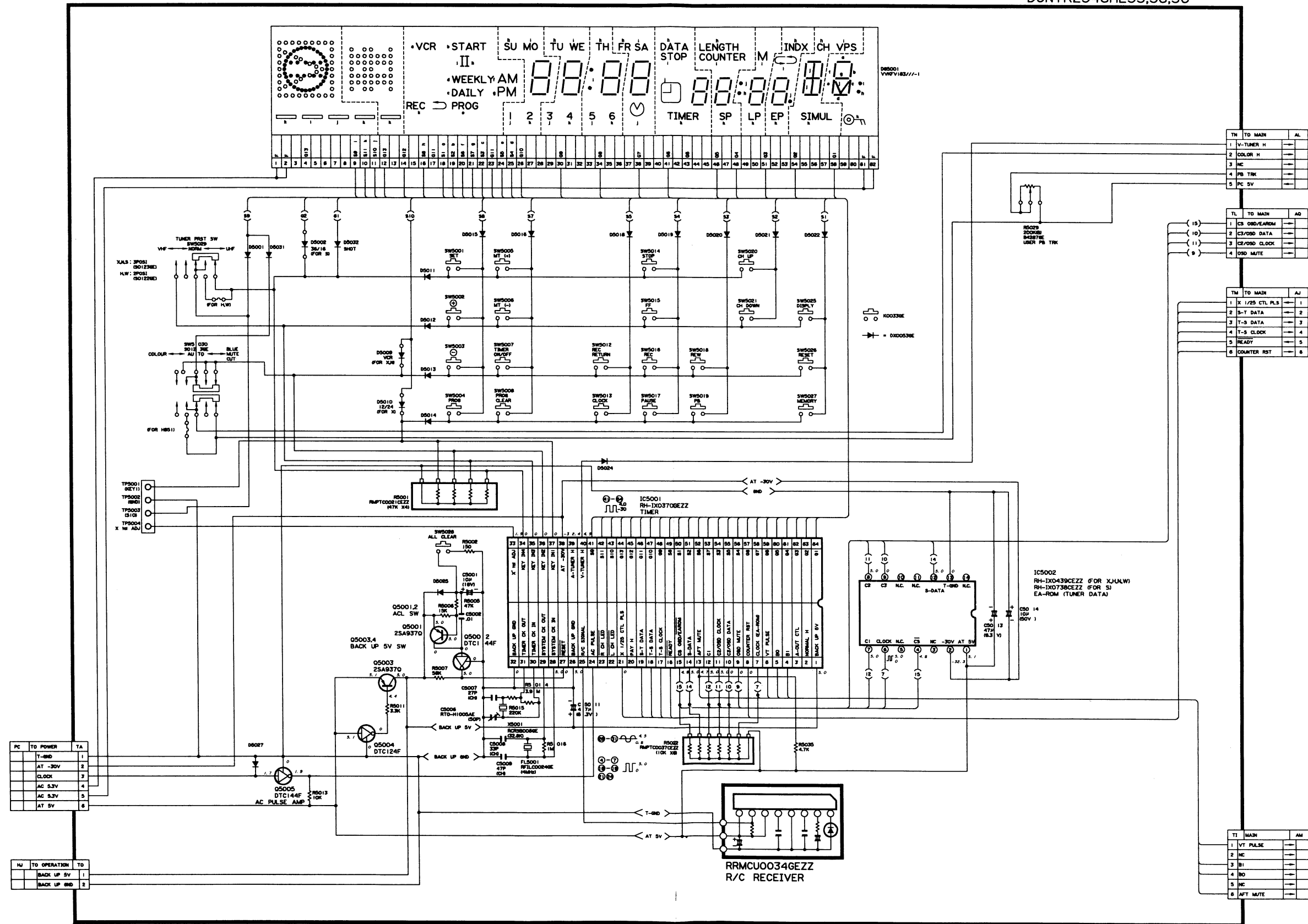
PWB-B, Y/C AUDIO CIRCUIT SCHEMATIC DIAGRAM
LEITERPLATTE B, SCHEMATISCHER SCHALTPLAN DER Y/C TON-SCHALTUNG



Audio record signal
Tonaufzeichnungssignal

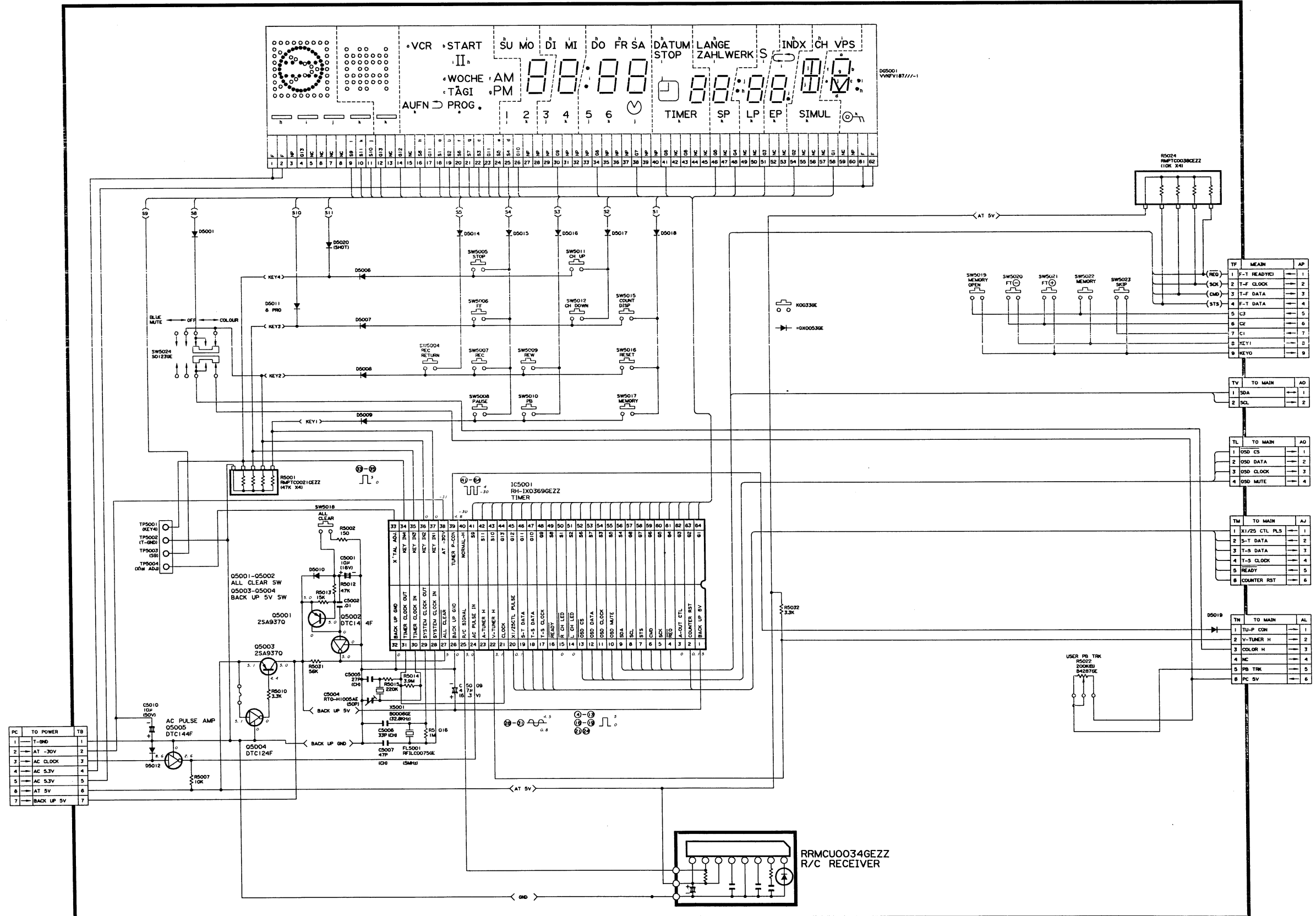
PWB-T, TIMER CIRCUIT SCHEMATIC DIAGRAM (VC-D801S)
LEITERPLATTE T, SCHEMATISCHER SCHALTPLAN ZEITSCHALTUHR-SCHALTUNG (VC-D801S)

DUNTK2548HE55,58,56



PWB-T, TIMER CIRCUIT SCHEMATIC DIAGRAM (VC-D802G)
LEITERPLATTE T, SCHEMATISCHER SCHALTPLAN ZEITSCHALTUHR-SCHALTUNG (VC-D802G)

DUNTK2545HE55

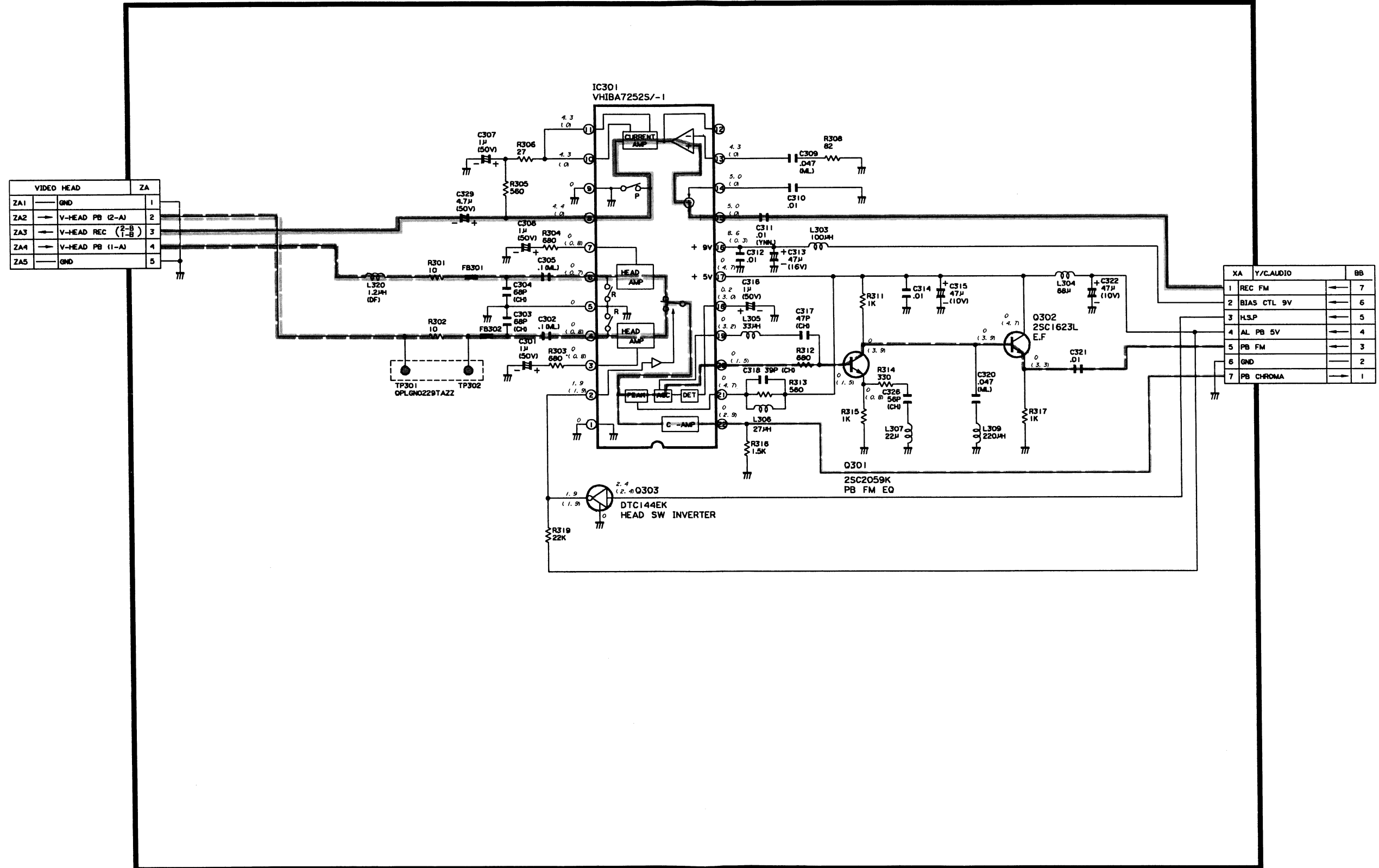


VC-D801S(BK) VC-D801S(BK)
VC-D802G(BK) VC-D802G(BK)

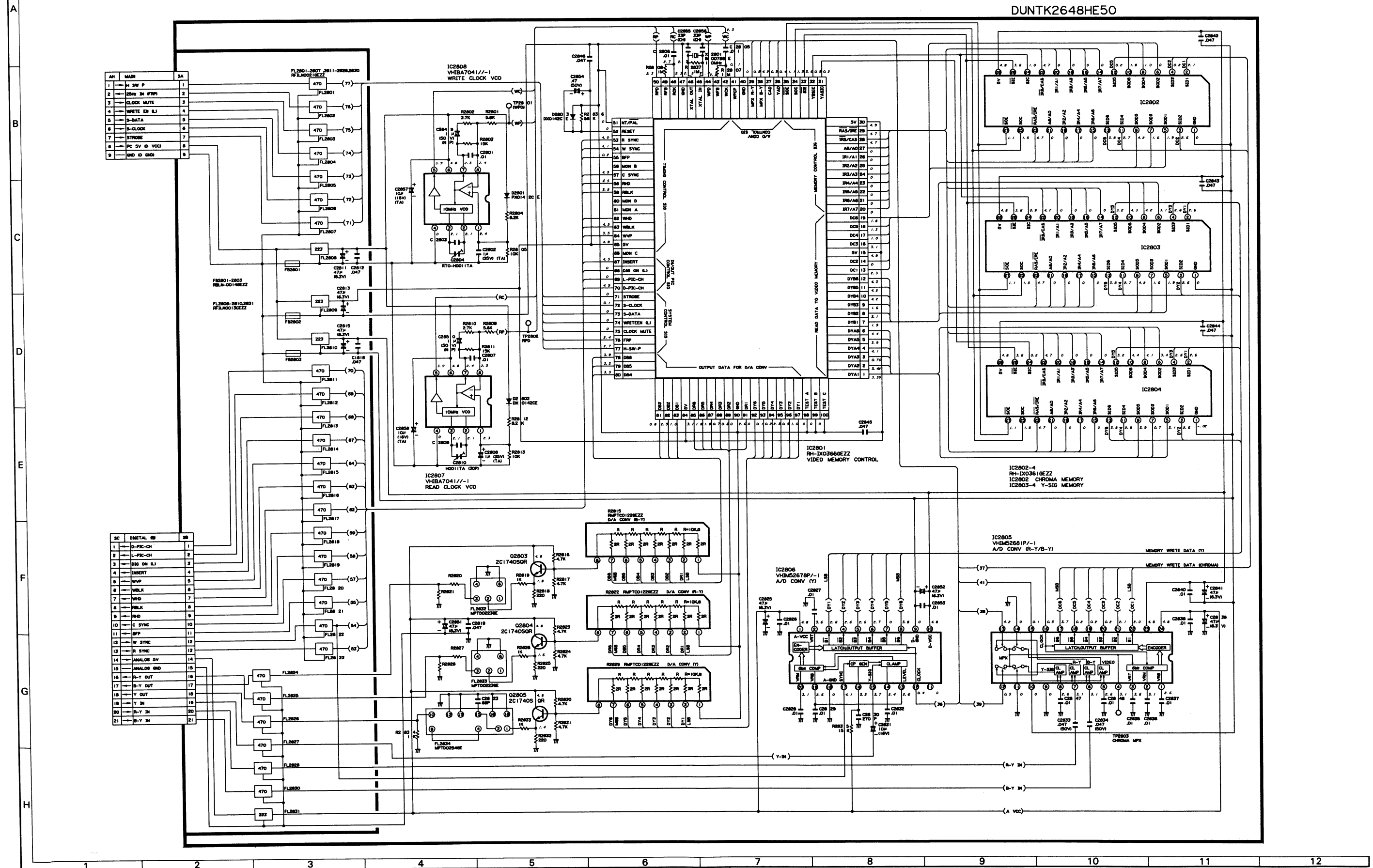
PWB-X, HEAD AMPLIFIER CIRCUIT SCHEMATIC DIAGRAM LEITERPLATTE X, SCHEMATISCHER SCHALTPLAN DER KOPFVERSTÄRKERSCHALTUNG

Record luminance signal Playback luminance signal
Aufzeichnungs-Luminanzsignal Wiedergabe-Luminanzsignal
Record chrominance signal Playback chrominance signal
Aufzeichnungs-Chrominanzsignal Wiedergabe-Chrominanzsignal

DUNTK2486TM55

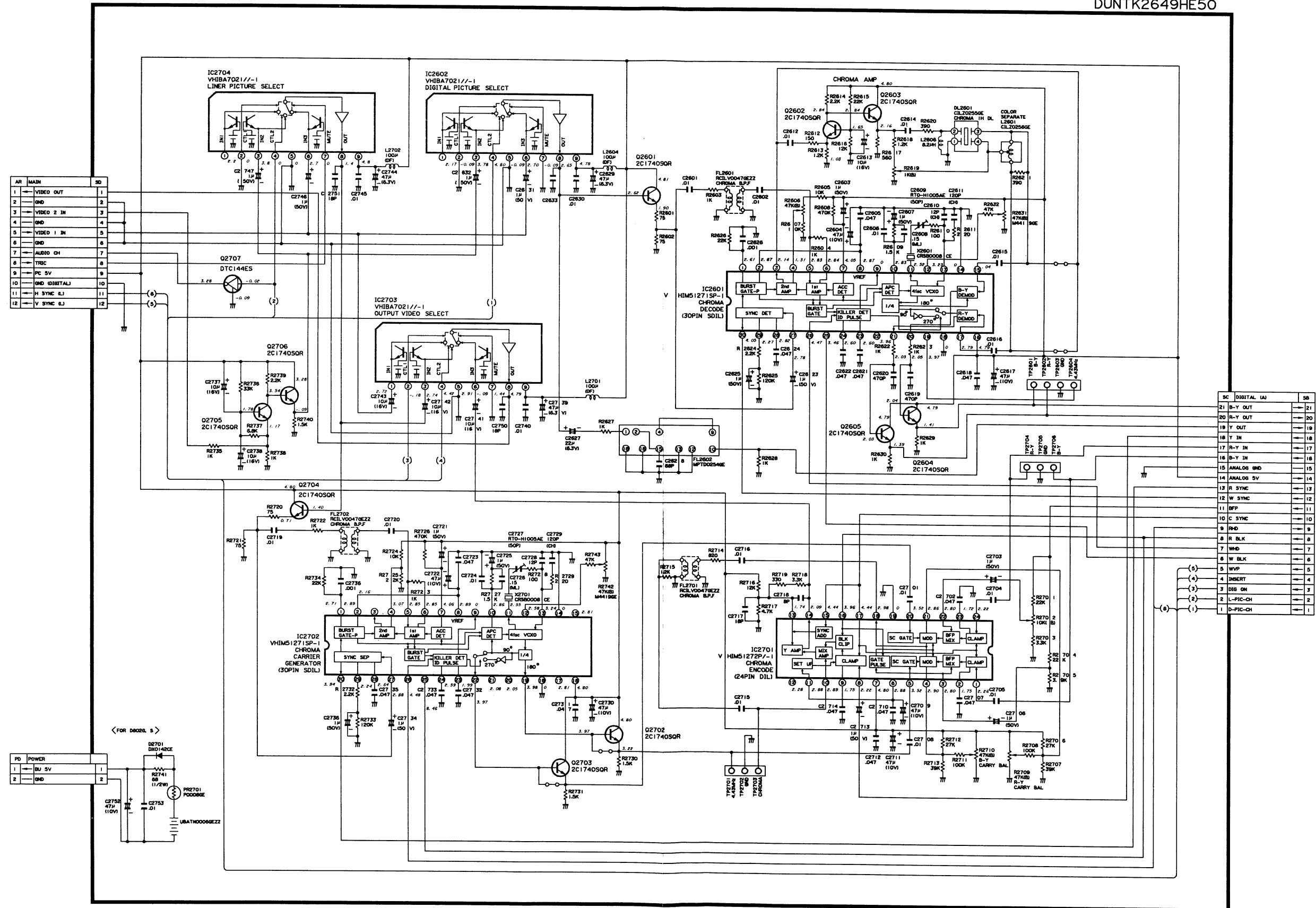


PWB-S, DIGITAL (A) CIRCUIT SCHEMATIC DIAGRAM
LEITERPLATTE S, SCHEMATISCHER SCHALTPLAN DER DIGITALSCHALTUNG (A)

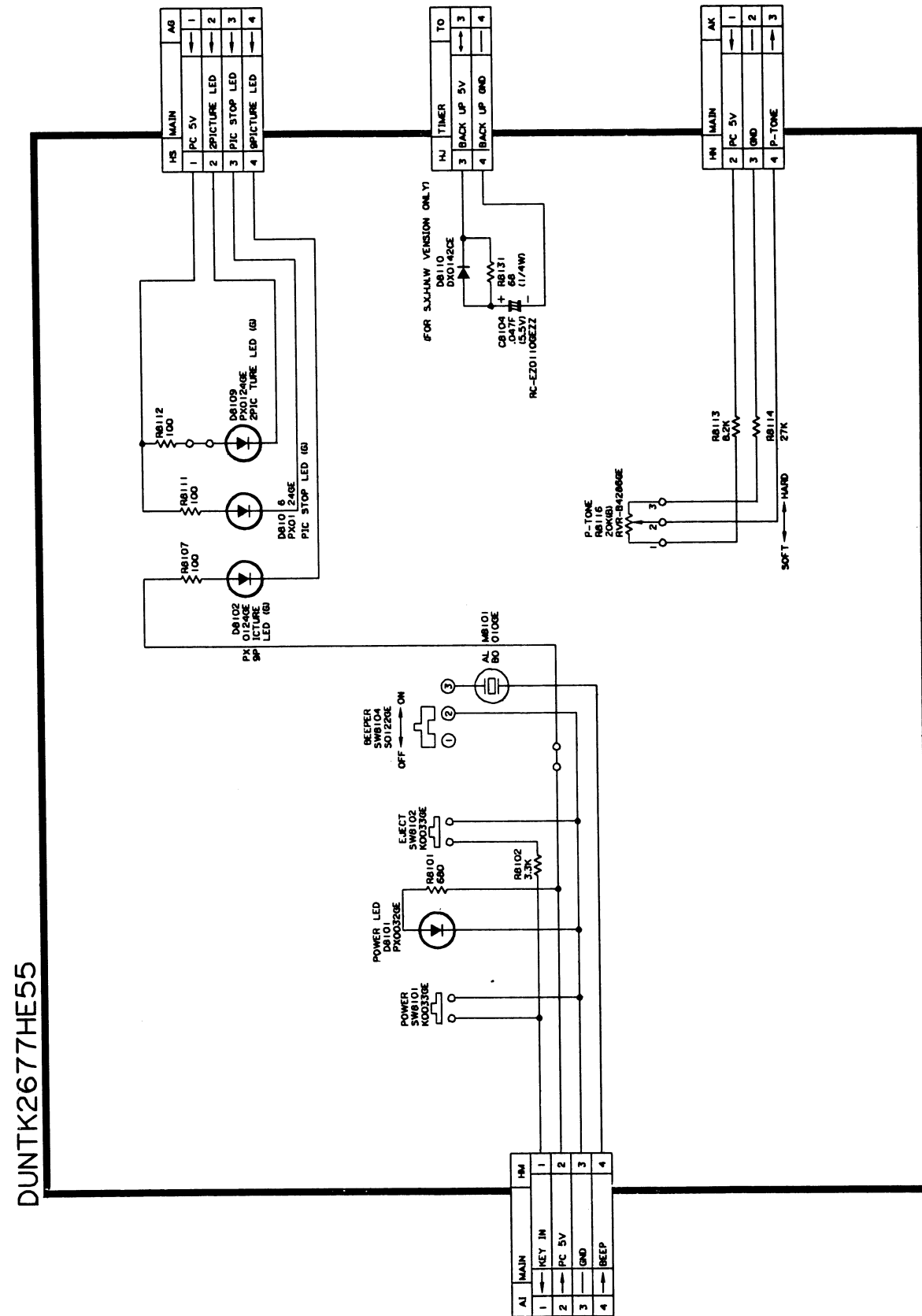


PWB-S, DIGITAL (B) CIRCUIT SCHEMATIC DIAGRAM
LEITERPLATTE S, SHCEMATISCHER SCHALTPLAN DER DIGITALSCHALTUNG (B)

DUNTK2649HE50

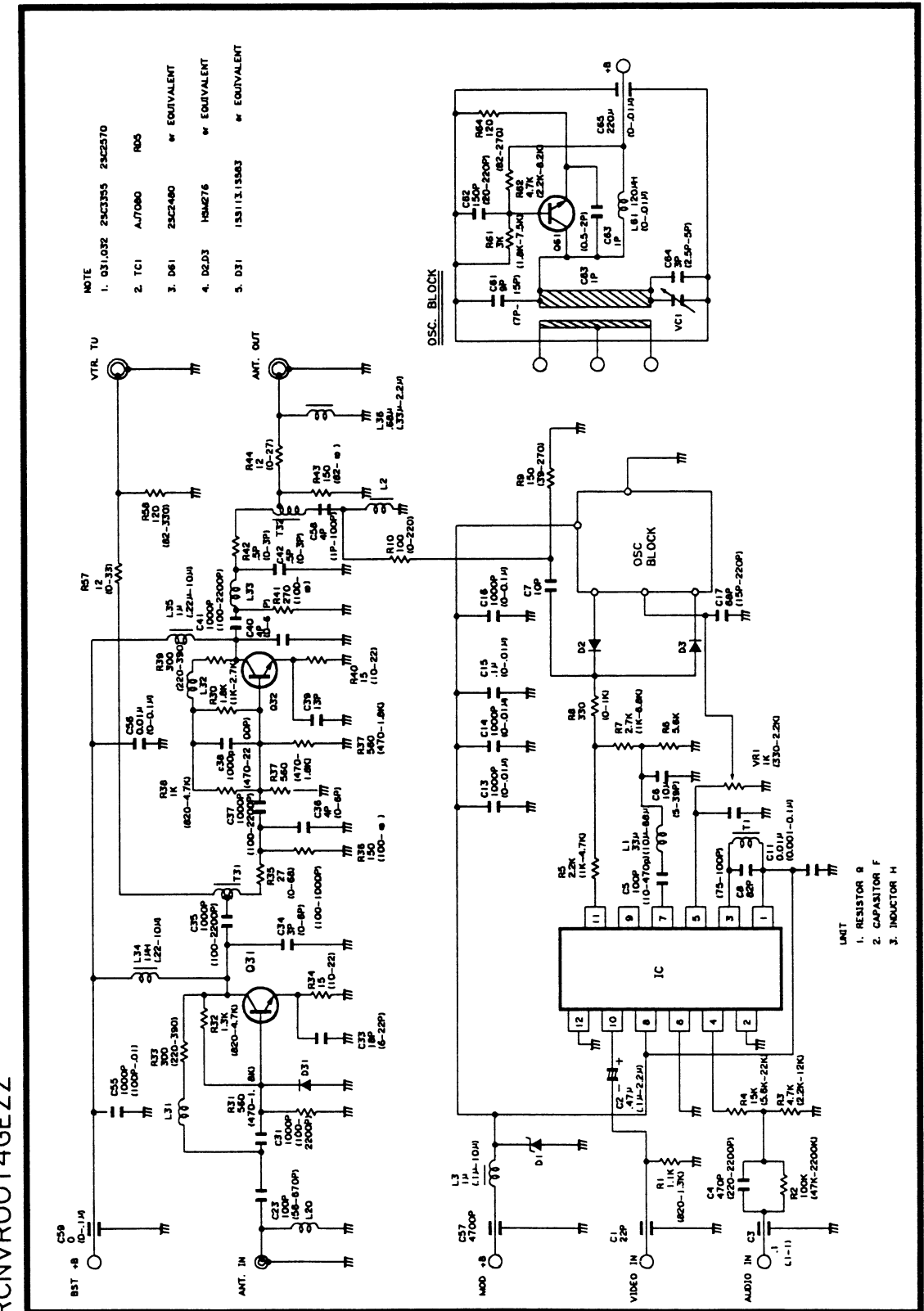


PWB-H, OPERATION CIRCUIT SCHEMATIC DIAGRAM LEITERPLATTE H, SCHEMATISCHER SCHALTPLAN DER BETRIEBSSCHALTUNG

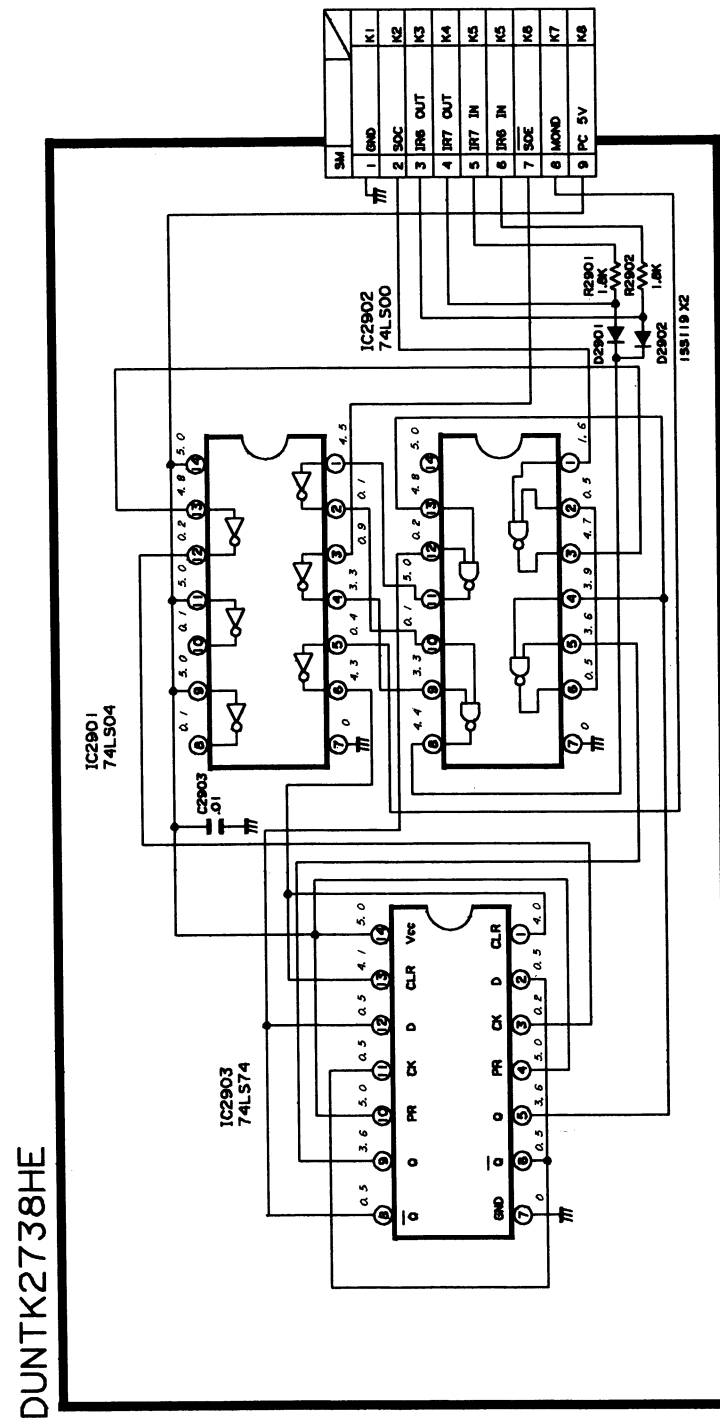


RF CONVERTER SCHEMATIC DIAGRAM SCHEMATISCHER SCHALTPLAN HF-WANDLER

RCNVRO014GEZZ

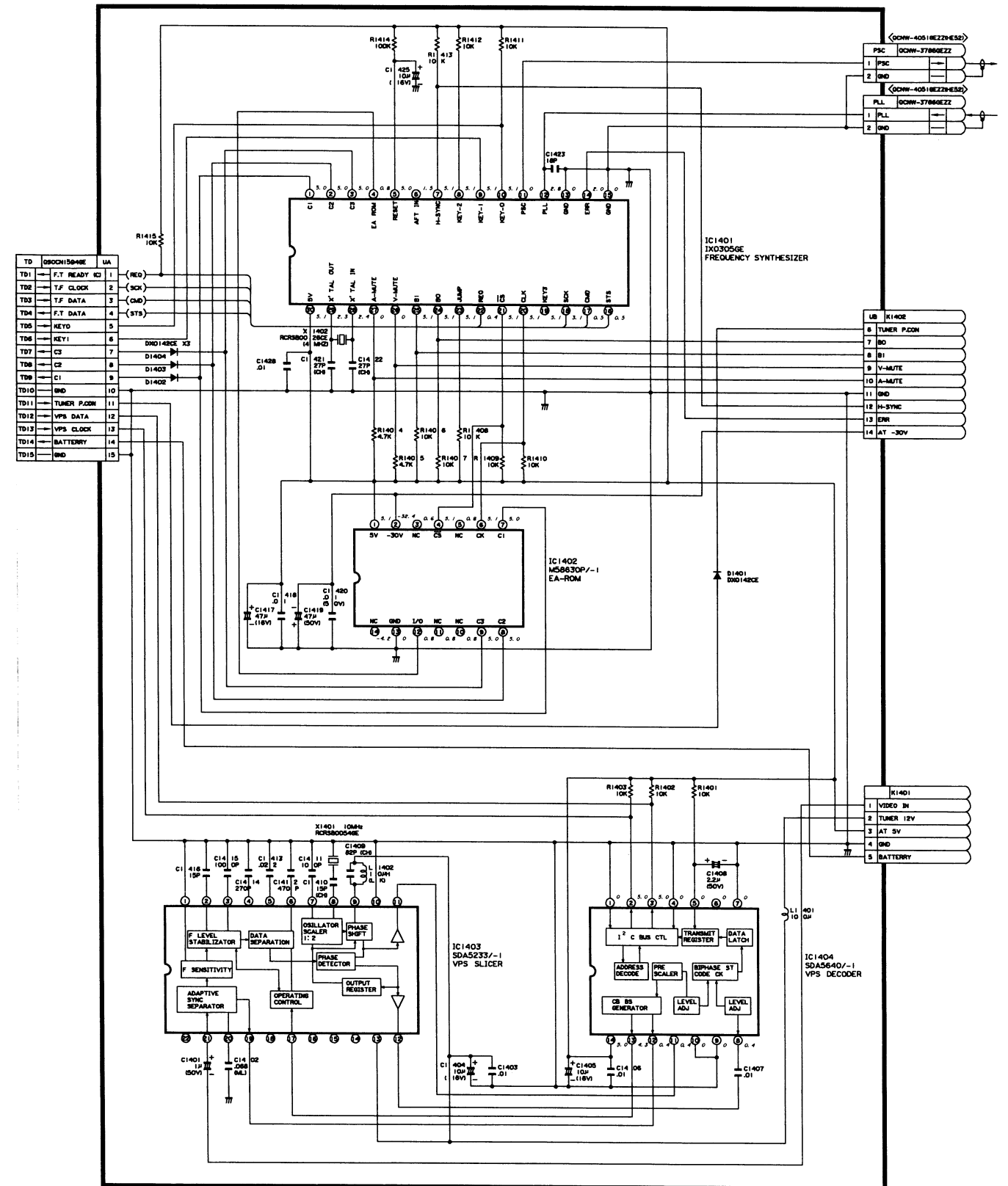


DIGITAL (A) SUB CIRCUIT SCHEMATIC DIAGRAM
SHCEMATISCHER SCHALTPLAN DER DIGITALSUBSCHALTUNG (A)



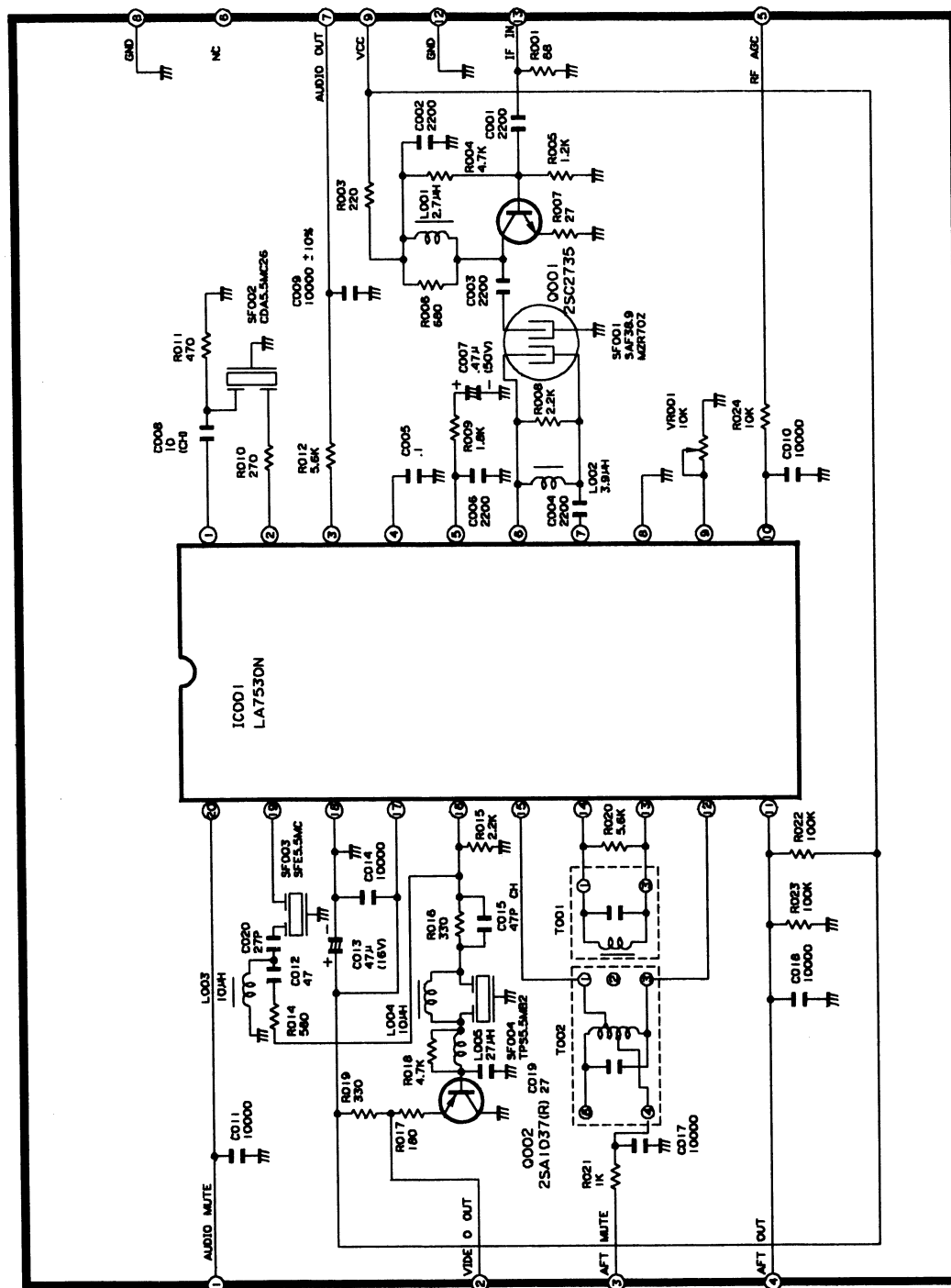
DUNK2738HE

VPS DECODER CIRCUIT SCHEMATIC DIAGRAM (VC-D802G)
SCHEMATISCHER SCHALTPLAN DER VPS-DECODERSCHALTUNG (VC-D802G)



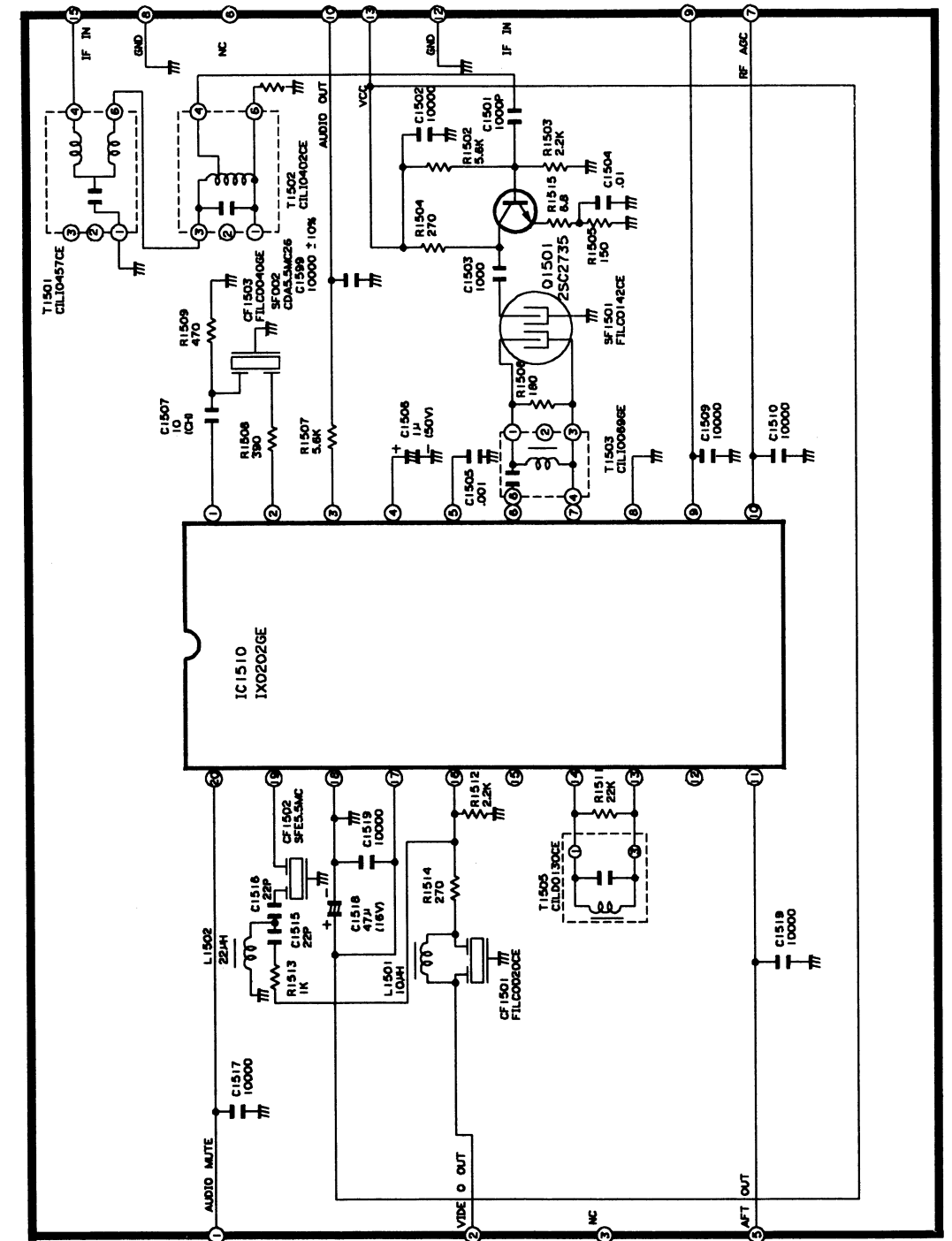
INTERMEDIATE FREQUENCY TUNER CIRCUIT SCHEMATIC DIAGRAM
(VC-D801S)
SCHEMATISCHER SCHALTPLAN DER ZWISCHENFREQUENZ-
TUNERSCHALTUNG (VC-D801S)

RUNTKO437GEZZ

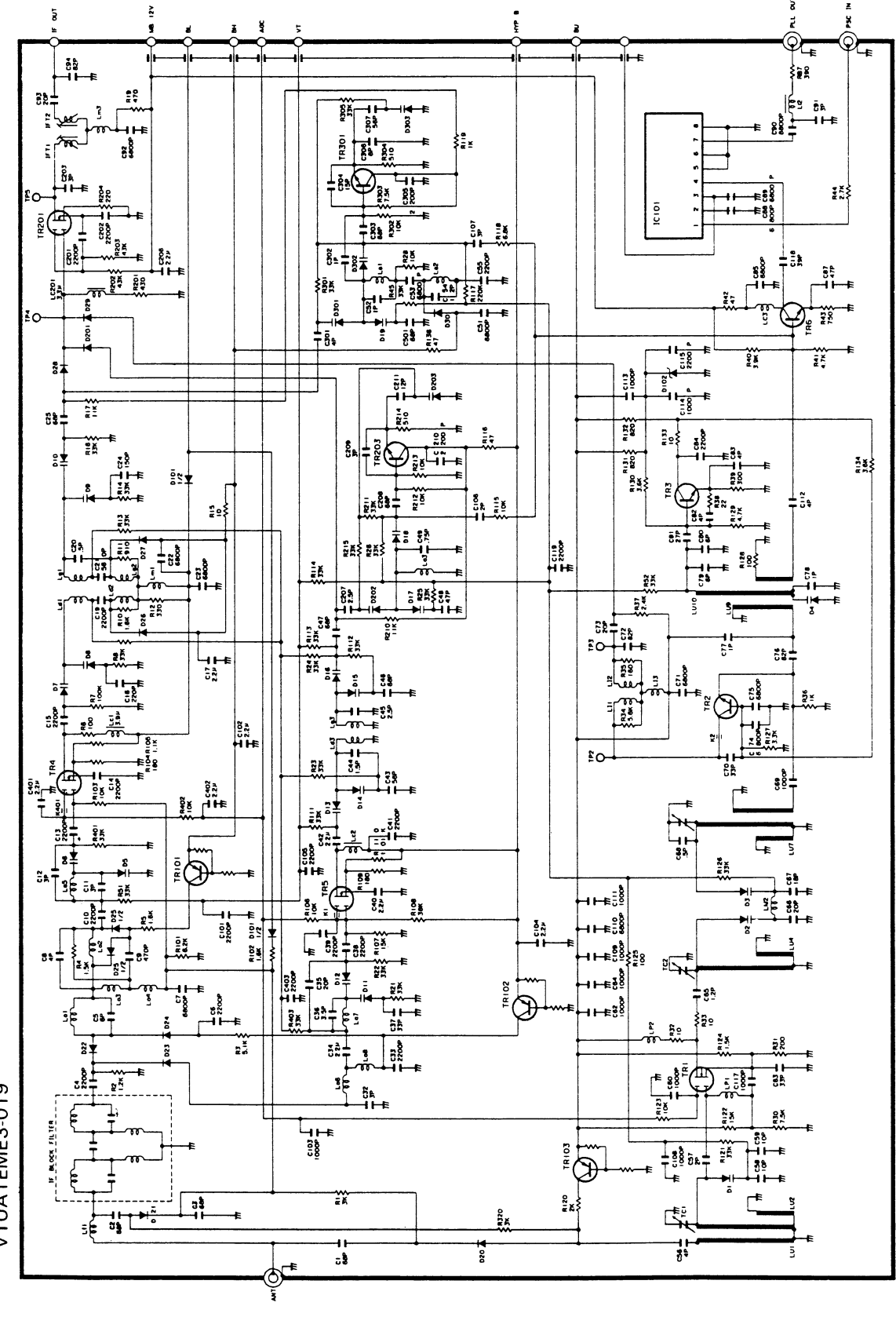


RUNTKO436GEZZ

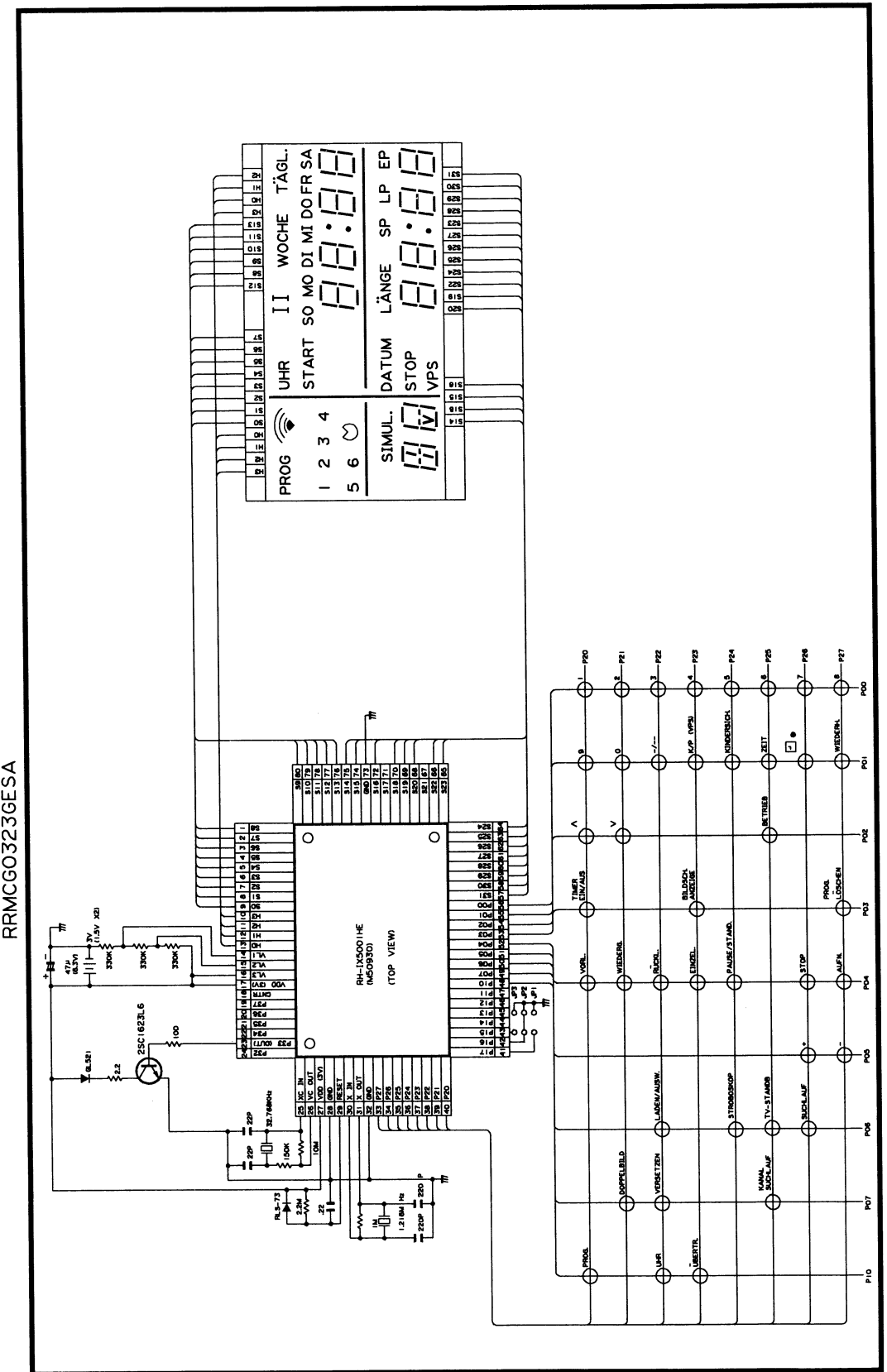
INTERMEDIATE FREQUENCY TUNER CIRCUIT SCHEMATIC DIAGRAM
(VC-D802G)
SCHEMATISCHER SCHALTPLAN DER ZWISCHENFREQUENZ-
TUNERSCHALTUNG (VC-D802G)



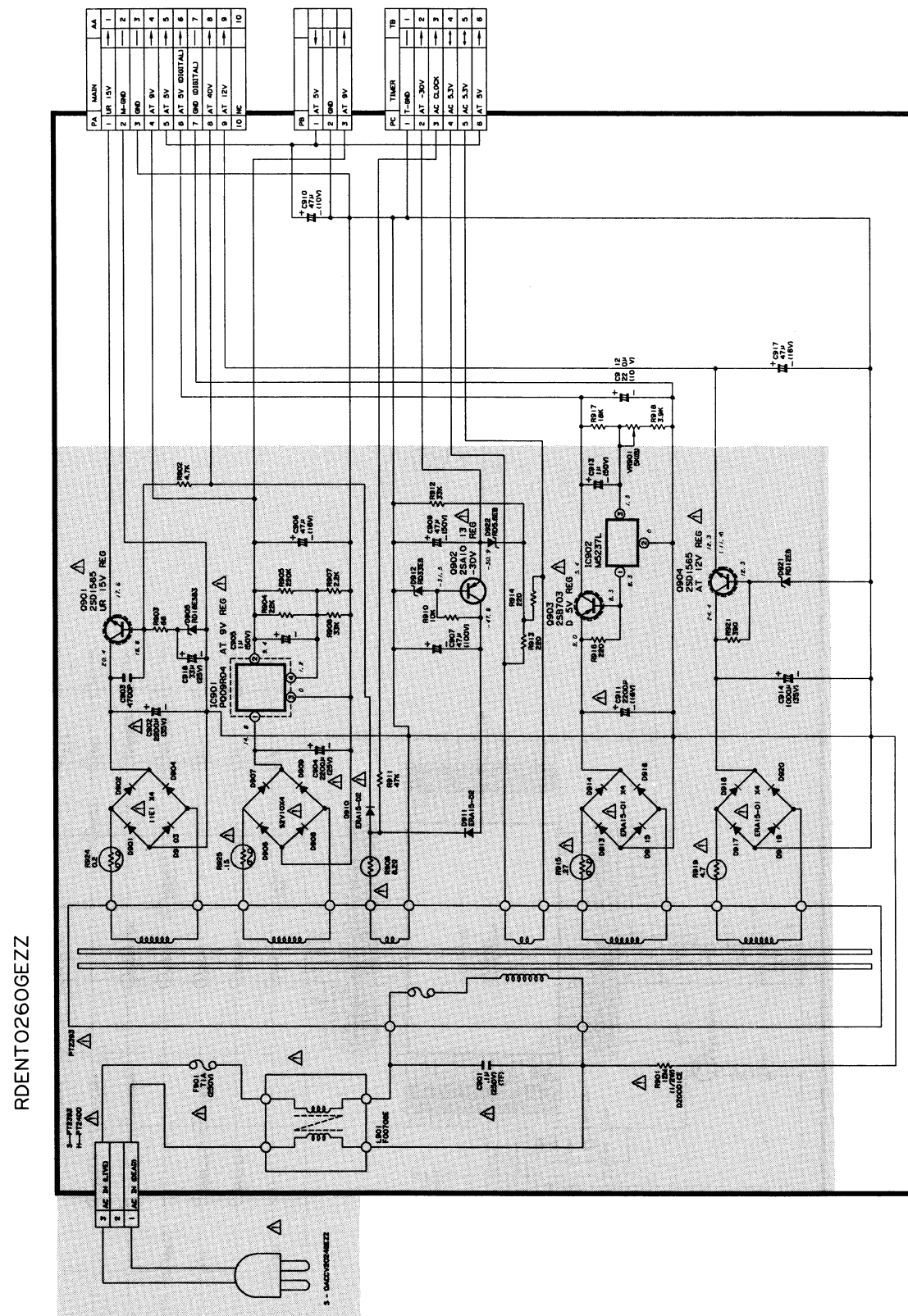
TUNER SCHEMATIC DIAGRAM (VC-D802G) SCHEMATISCHER SCHALTPLAN DES TUNER (VC-D802G)



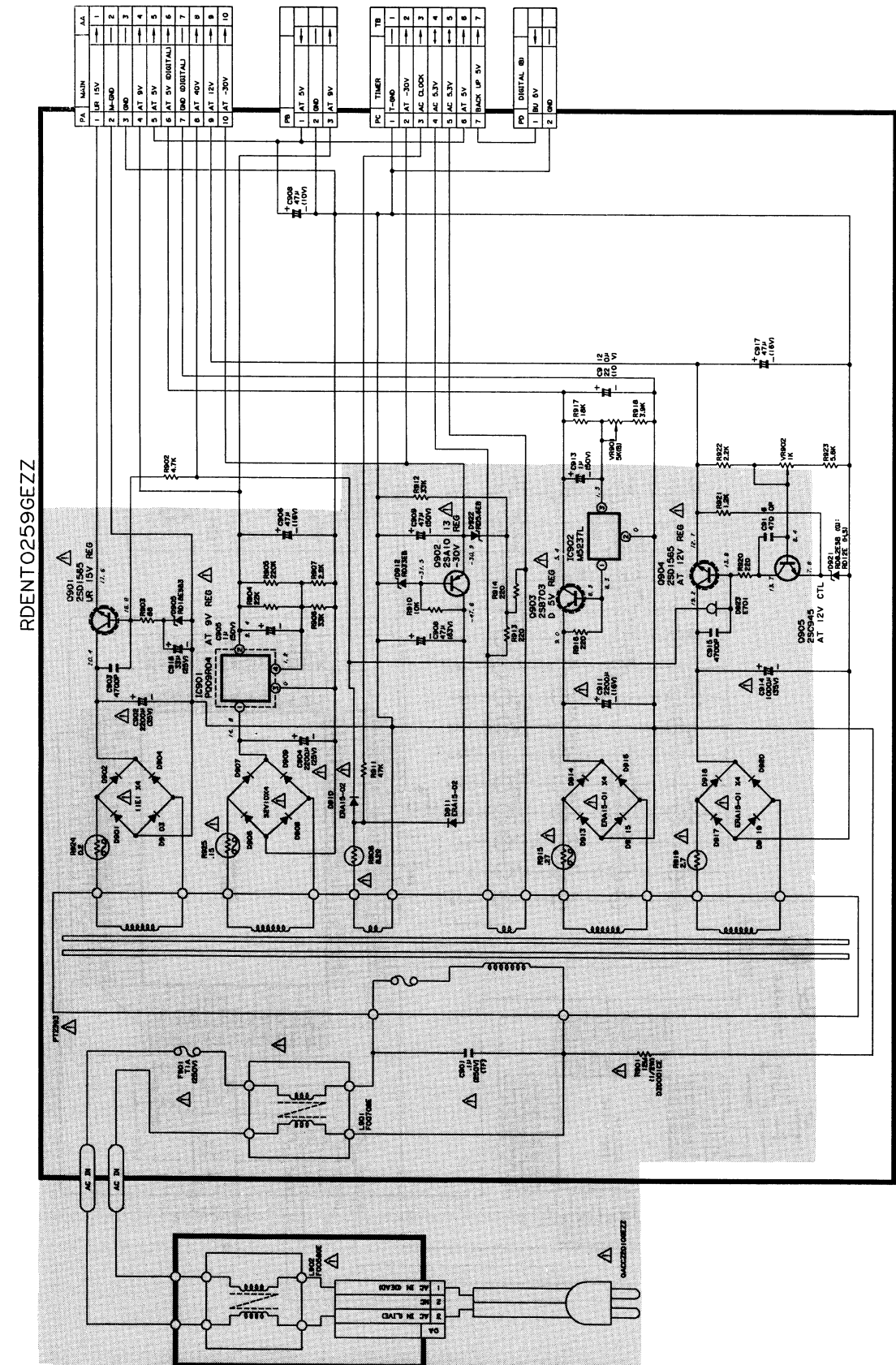
REMOTE CONTROL CIRCUIT SCHEMATIC DIAGRAM (VC-D802G) SCHEMATISCHER SCHALTPLAN DES FERNBEDIENUNGSSCHALTUNG (VC-D802G)



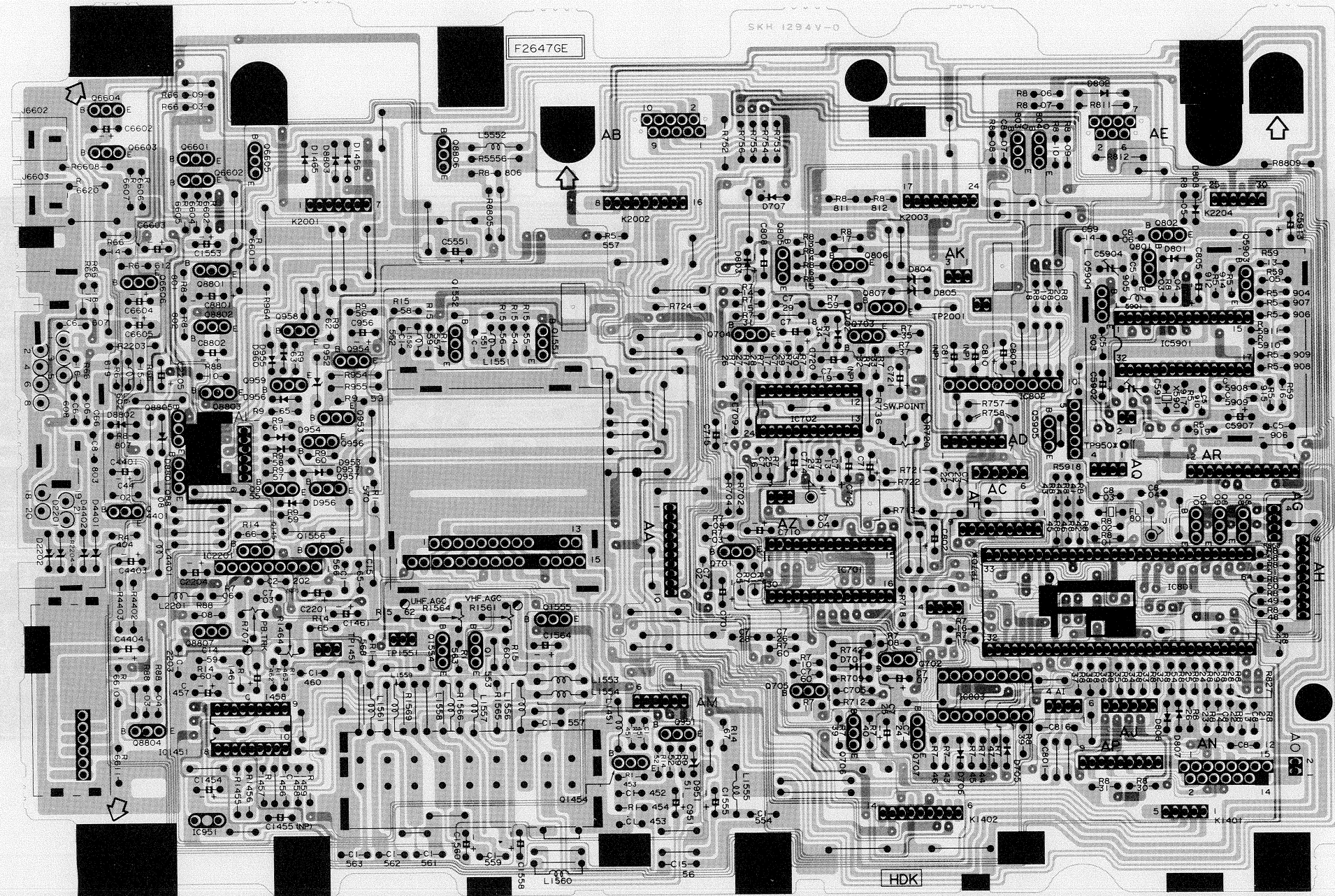
PWB-P, POWER CIRCUIT SCHEMATIC DIAGRAM (VC-D801S)
LEITERPLATTE P, SCHEMATISCHER SCHALTPLAN DER
STROMVERSOGGUNSSCHALTUNG (VC-D801S)



PWB-P, POWER CIRCUIT SCHEMATIC DIAGRAM (VC-D802G)
LEITERPLATTE P, SCHEMATISCHER SCHALTPLAN DER
STROMVERSOGGUNSSCHALTUNG (VC-D802G)



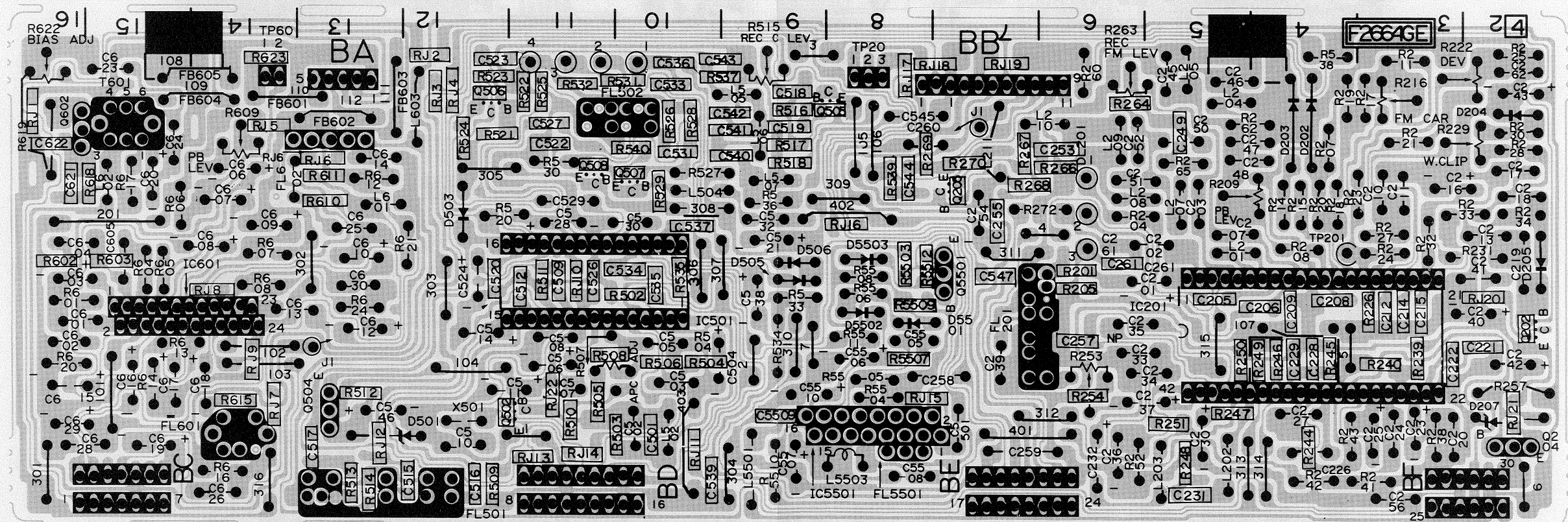
PWB-A, SYSTEM CONTROL, SERVO CIRCUIT WIRING SIDE PWB
LEITERPLATTE A, LEITERBAHNSEITE DER LEITERPLATTE FÜR DIE
SYSTEMSTEUERUNG, SERVOSCHALTUNG



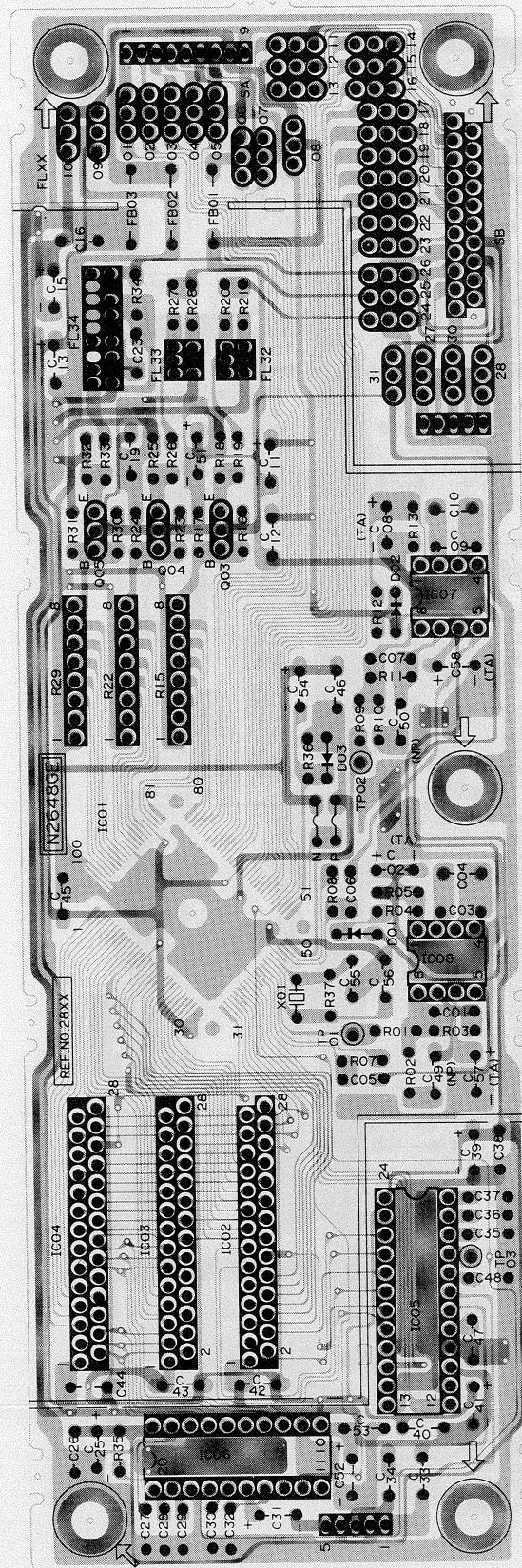
VC-D801S(BK)
VC-D802G(BK)

VC-D801S(BK)
VC-D802G(BK)

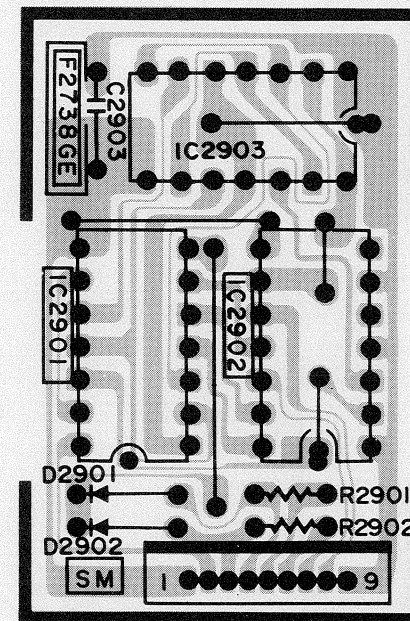
PWB-B, Y/C AUDIO CIRCUIT WIRING SIDE PWB
LEITERPLATTE B, LEITERBAHNSEITE DER LEITERPLATTE FÜR DIE Y/C TON-
SCHALTUNG



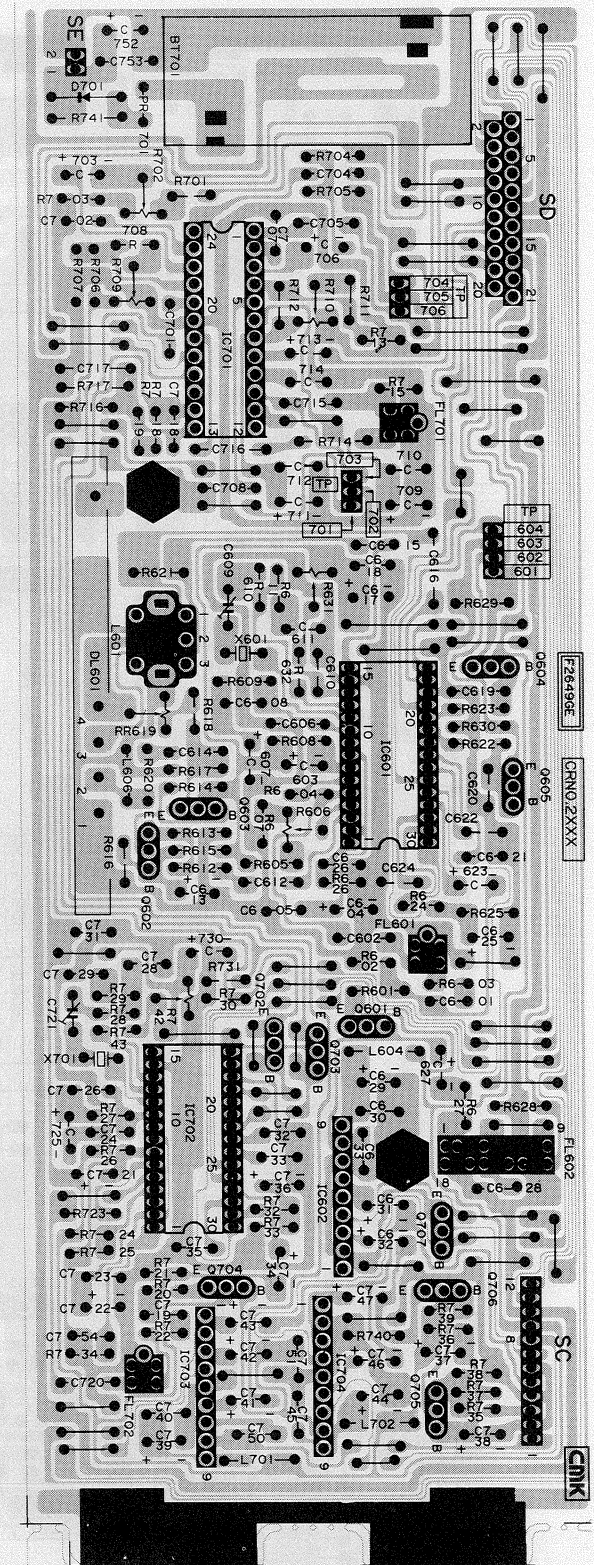
PWB-S, DIGITAL (A) CIRCUIT WIRING SIDE PWB
LEITERPLATTE S, LEITERBAHNSEITE FÜR DIE
DIGITALSCHALTUNG (A)



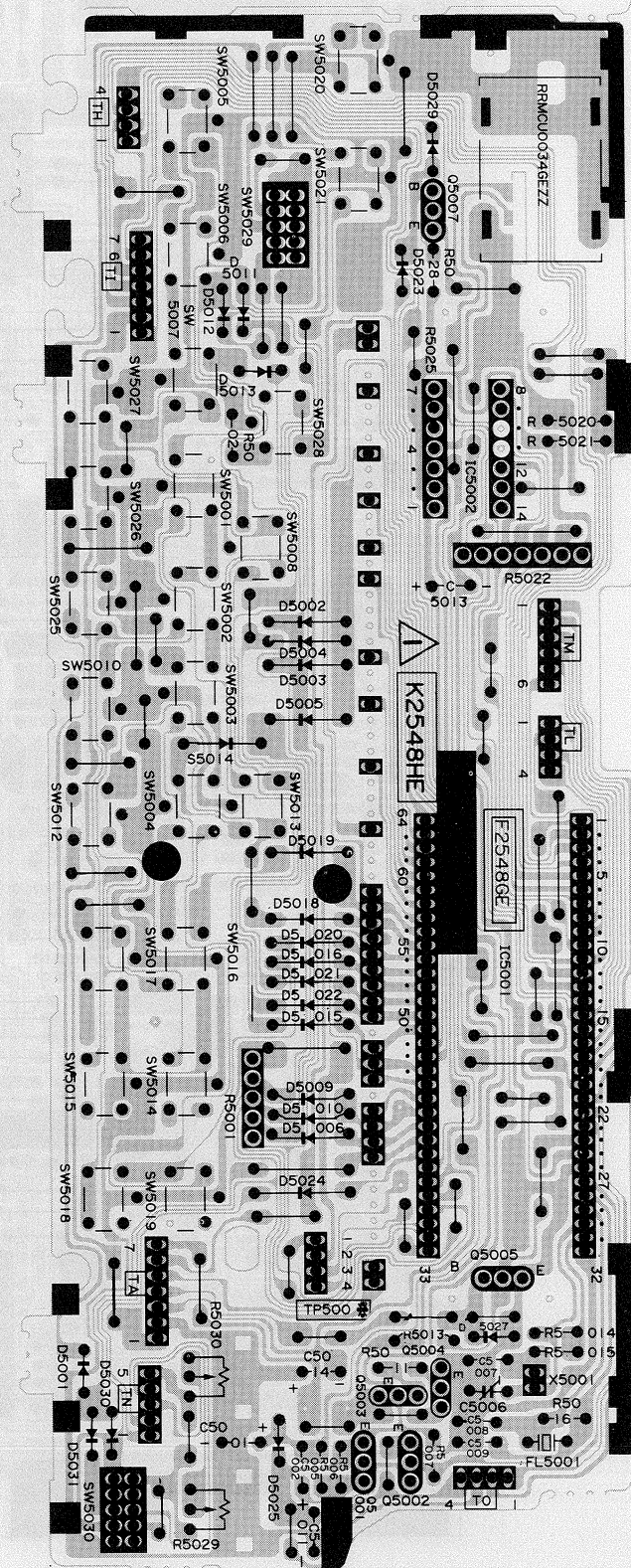
DIGITAL (A) SUB CIRCUIT
WIRING SIDE PWB
LEITERBAHNSEITE FÜR DIE
DIGITALSUBSCHALTUNG (A)



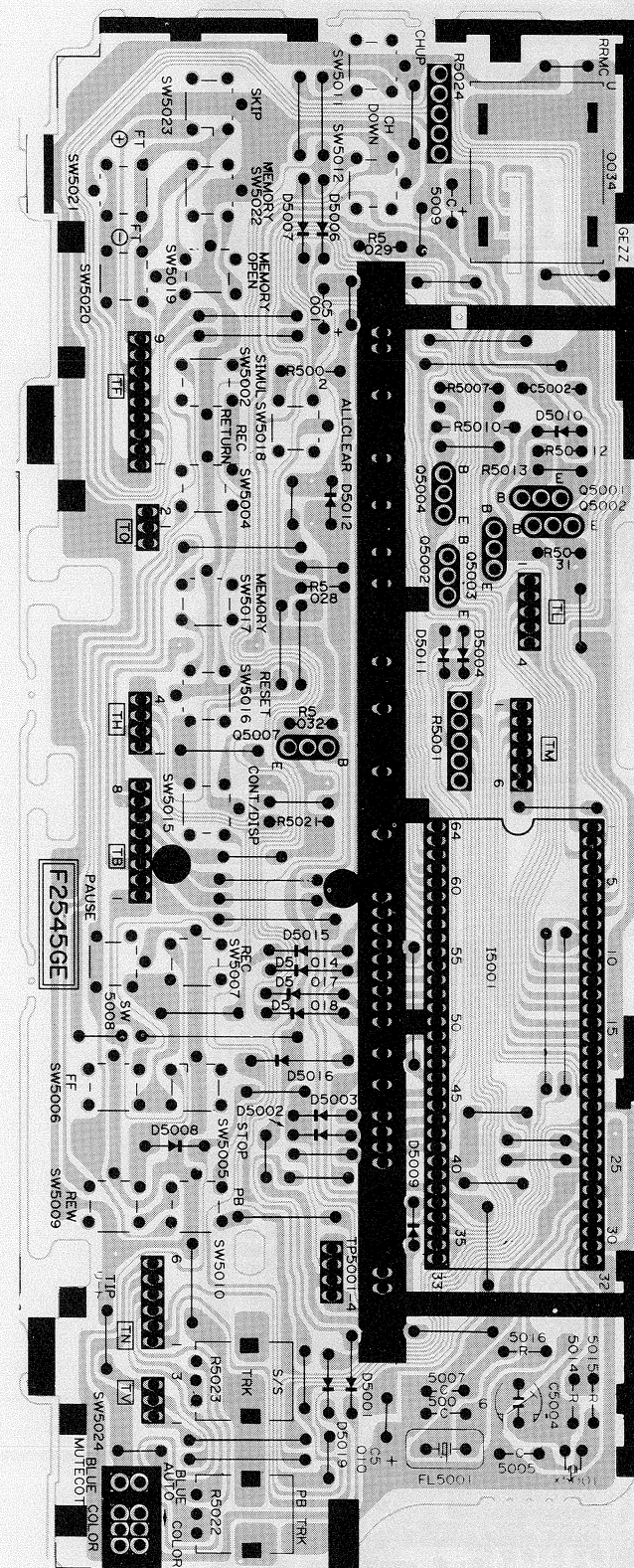
PWB-S, DIGITAL (B) CIRCUIT WIRING SIDE PWB
LEITERPLATTE S, LEITERBAHNSEITE FÜR DIE
DIGITALSCHALTUNG (B)



PWB-T, TIMER CIRCUIT WIRING SIDE PWB (VC-D801S)
LEITERPLATTE T, LEITERBAHNSEITE DER LEITERPLATTE FÜR DIE
ZEITSCHALTUHRSCHALTUNG (VC-D801S)

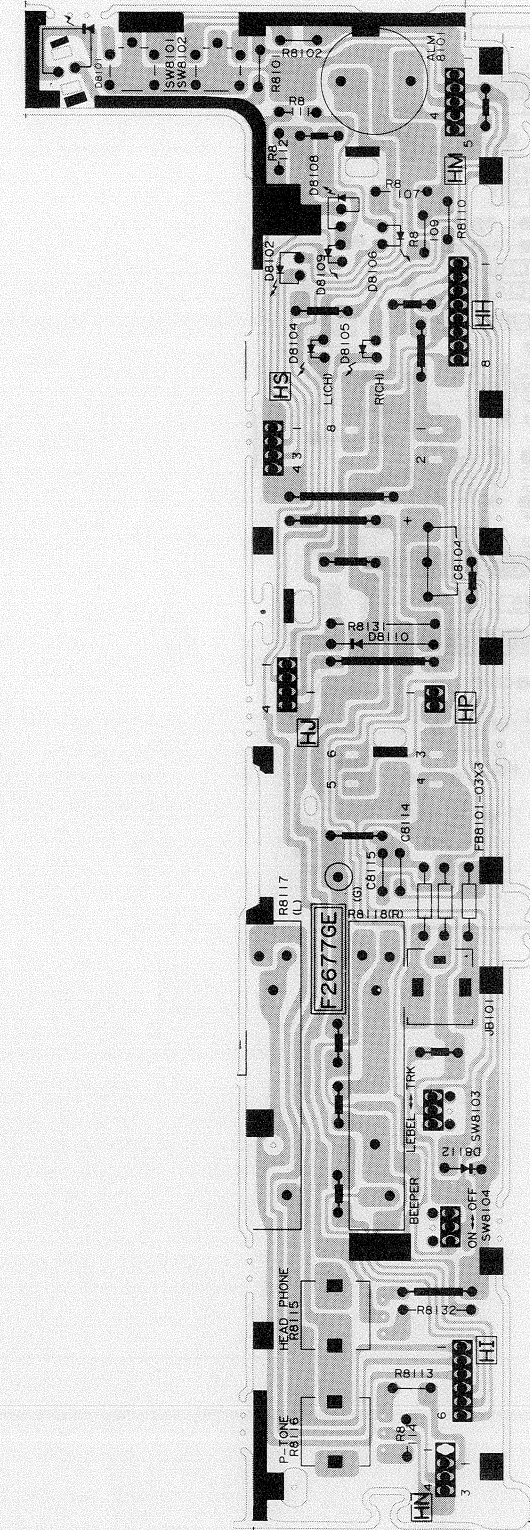


PWB-T, TIMER CIRCUIT WIRING SIDE PWB (VC-D802G)
LEITERPLATTE T, LEITERBAHNSEITE DER LEITERPLATTE FÜR DIE
ZEITSCHALTUHRSCHALTUNG (VC-D802G)

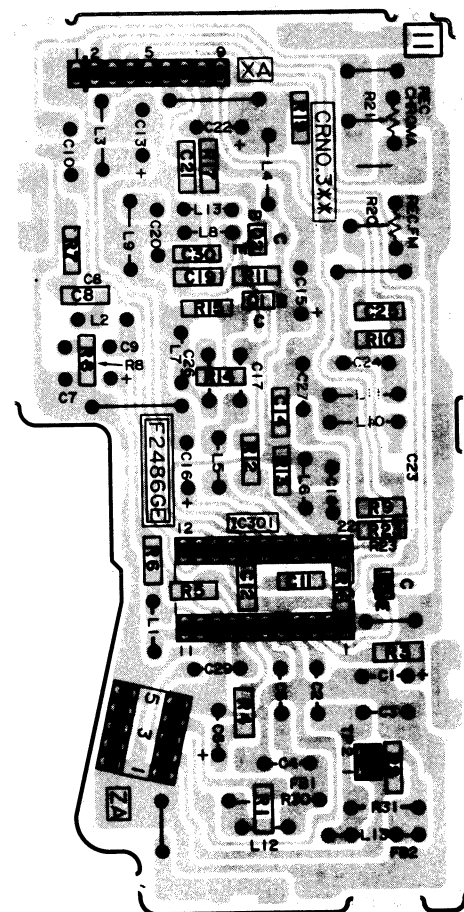


VC-D801S(BK)
VC-D802G(BK)

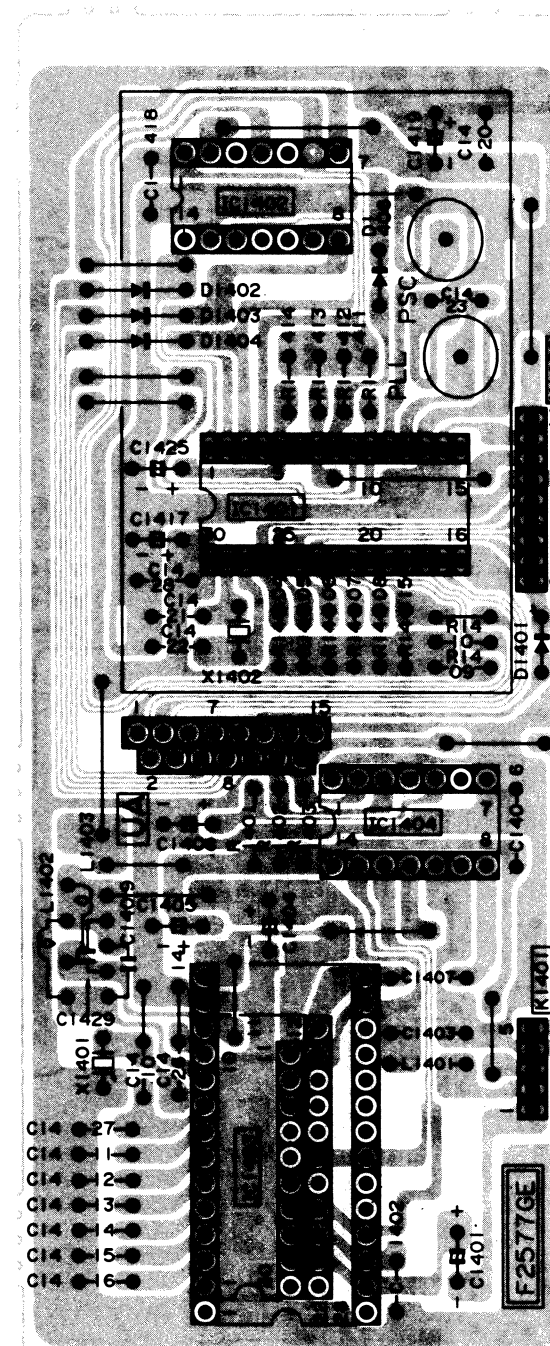
**PWB-H, OPERATION CIRCUIT WIRING SIDE PWB (VC-D802G)
LEITERPLATTE H, LEITERBAHNSEITE DER LEITERPLATTE
FÜR DIE BETRIEBSSCHALTUNG (VC-D802G)**



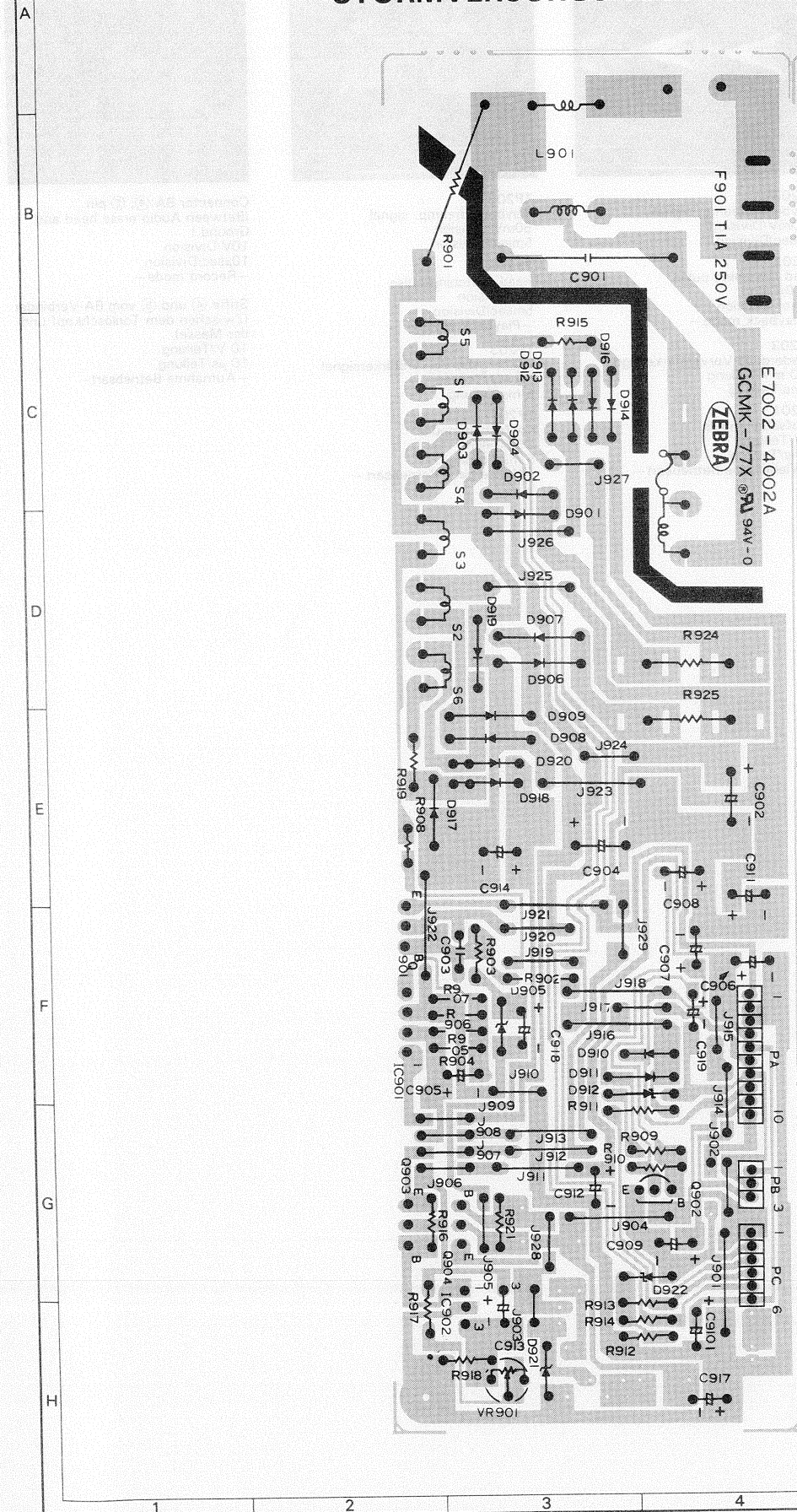
PWB-X, HEAD AMPLIFIER CIRCUIT WIRING SIDE PWB
LEITERPLATTE X, LEITERBAHNSEITE DER LEITERPLATTE FÜR DIE
KOPFVERSTÄRKERESCHALTUNG



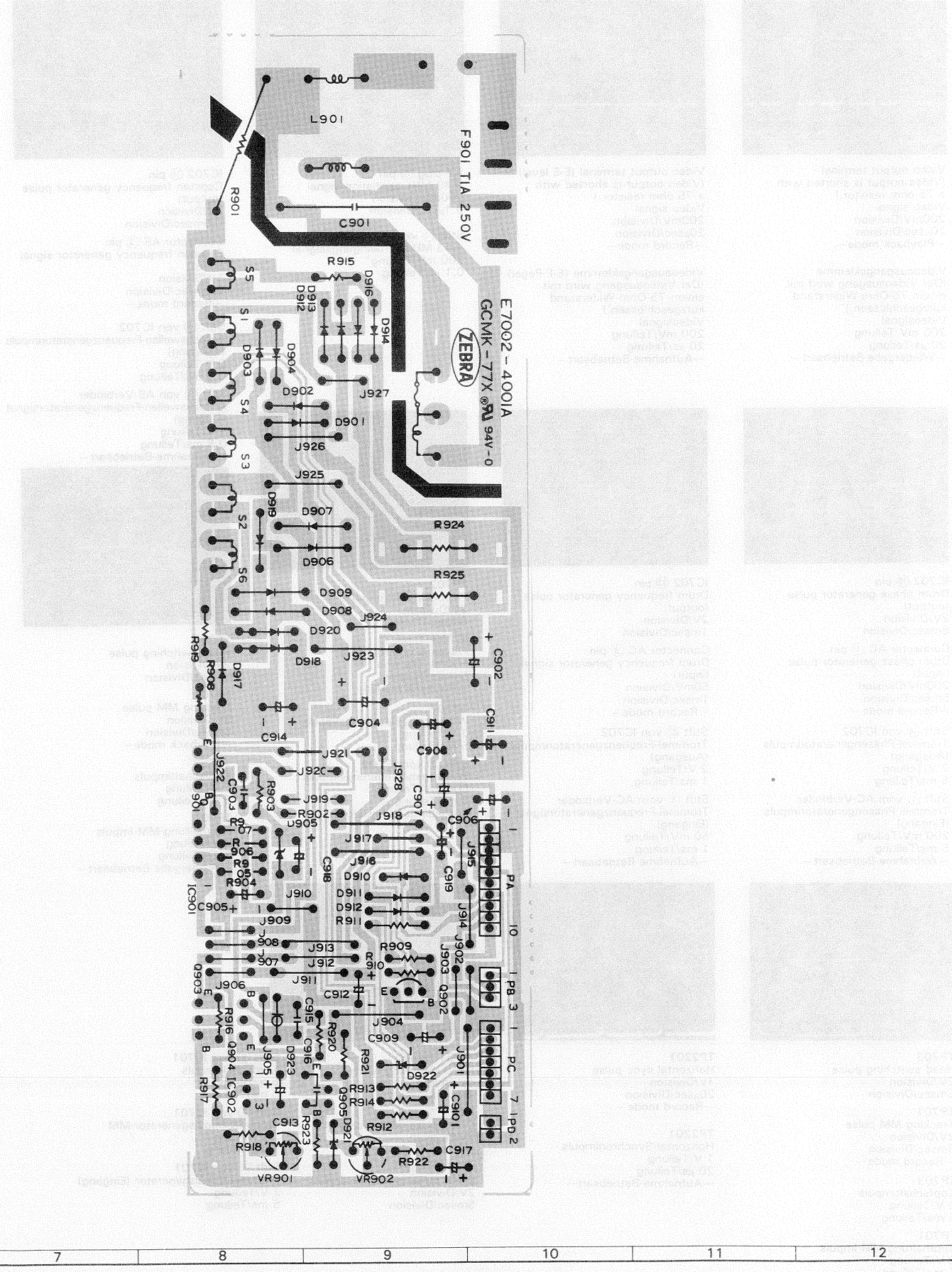
VPS DECODER CIRCUIT WIRING SIDE PWB (VC-D802G)
LEITERBAHNSEITE DER LEITERPLATTE FÜR DIE
VPS-DECODERSCHALTUNG (VC-D802G)



PWB-P, POWER CIRCUIT WIRING SIDE PWB (VC-D801S)
LEITERPLATTE P, LEITERBAHNSEITE DER LEITERPLATTE FÜR DIE
STORMVERSORGUNGSSCHALTUNG (VC-D801S)

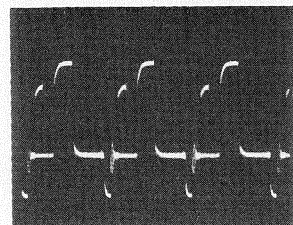


PWB-P, POWER CIRCUIT WIRING SIDE PWB (VC-D802G)
LEITERPLATTE P, LEITERBAHNSEITE DER LEITERPLATTE FÜR DIE
STORMVERSORGUNGSSCHALTUNG (VC-D802G)



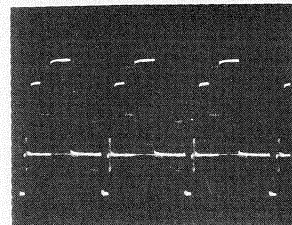
WAVE FORMS / WELLENFORMEN

SYSTEM CONTROL, SERVO, IF PWBs / SYSTEMSTEUERUNG-, SERVO- UND ZF-LEITERPLATTEN



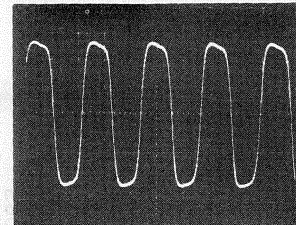
Video output terminal
(Video output is shorted with
a 75 ohm resistor.)
Video signal
200mV/Division
20µsec/Division
— Playback mode —

Videoausgangsklemme
(Der Videoausgang wird mit
einem 75-Ohm-Widerstand
kurzgeschlossen.)
Videosignal
200 mV/Teilung
20 µs/Teilung
— Wiedergabe-Betriebsart —



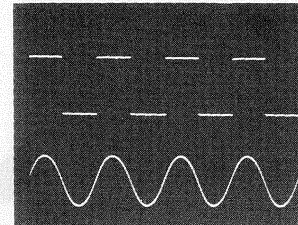
Video output terminal (E-E level)
(Video output is shorted with
a 75 ohm resistor.)
Video signal
200mV/Division
20µsec/Division
— Record mode —

Videoausgangsklemme (E-E-Pegel)
(Der Videoausgang wird mit
einem 75-Ohm-Widerstand
kurzgeschlossen.)
Videosignal
200 mV/Teilung
20 µs/Teilung
— Aufnahme-Betriebsart —



AY plug ⑫ pin
4.43 MHz oscillation signal
200mV/Division
0.1µsec/Division

Stift ⑫ vom AY-Stecker
4,43-MHz-Schwingungssignal
200 mV/Teilung
0,1 µs/Teilung

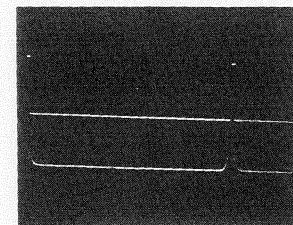


IC702 ④ pin
Capstan frequency generator pulse
(output)
2V/Division
0.5msec/Division

Connector AB ③ pin
Capstan frequency generator signal
(input)
1V/Division
0.5msec/Division
— Record mode —

Stift ④ von IC702
Antriebswellen-Frequenzgeneratorimpuls
(Ausgang)
2 V/Teilung
0,5 ms/Teilung

Stift ③ von AB-Verbinder
Antriebswellen-Frequenzgeneratorsignal
(Eingang)
1 V/Teilung
0,5 ms/Teilung
— Aufnahme-Betriebsart —

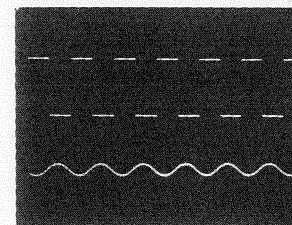


IC702 ⑧ pin
Drum phase generator pulse
(output)
2V/Division
5msec/Division

Connector AC ① pin
Drum phase generator pulse
(input)
200mV/Division
5msec/Division
— Record mode —

Stift ⑧ von IC702
Trommel-Phasengeneratorimpuls
(Ausgang)
2 V/Teilung
5 ms/Teilung

Stift ① vom AC-Verbinder
Trommel-Phasengeneratorsignal
(Eingang)
200 mV/Teilung
5 ms/Teilung
— Aufnahme-Betriebsart —

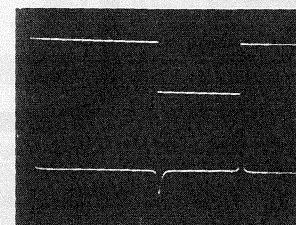


IC702 ⑫ pin
Drum frequency generator pulse
(output)
2V/Division
1msec/Division

Connector AC ③ pin
Drum frequency generator signal
(input)
50mV/Division
1msec/Division
— Record mode —

Stift ⑫ von IC702
Trommel-Frequenzgeneratorimpuls
(Ausgang)
2 V/Teilung
1 ms/Teilung

Stift ③ vom AC-Verbinder
Trommel-Frequenzgeneratorsignal
(Eingang)
50 mV/Teilung
1 ms/Teilung
— Aufnahme-Betriebsart —

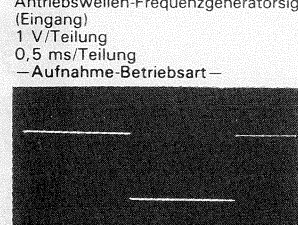


TP702
Playback control pulse
2V/Division
5msec/Division

IC702 ③ pin
Playback control pulse
500mV/Division
5msec/Division
— Playback mode —

TP702
Wiedergabesteuerungsimpuls
2 V/Teilung
5 ms/Teilung

Stift ③ von IC702
Wiedergabesteuerungsimpuls
500 mV/Teilung
5 ms/Teilung
— Wiedergabe-Betriebsart —

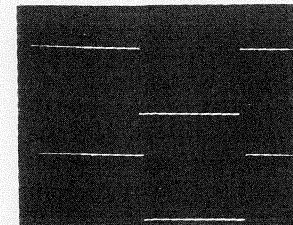


TP703
Head switching pulse
2V/Division
5msec/Division

TP701
Tracking MM pulse
2V/Division
5msec/Division
— Playback mode —

TP703
Kopfschaltimpuls
2 V/Teilung
5 ms/Teilung

TP701
Spurhaltung-MM-Impuls
2 V/Teilung
5 ms/Teilung
— Wiedergabe-Betriebsart —

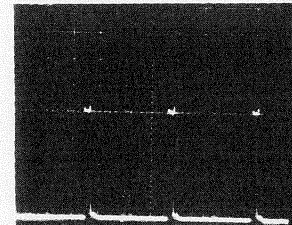


TP703
Head switching pulse
2V/Division
5msec/Division

TP701
Tracking MM pulse
2V/Division
5msec/Division
— Record mode —

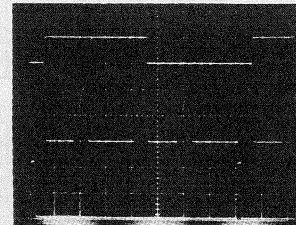
TP703
Kopfschaltimpuls
2 V/Teilung
5 ms/Teilung

TP701
Spurhaltung-MM-Impuls
2 V/Teilung
5 ms/Teilung
— Aufnahme-Betriebsart —



TP2201
Horizontal sync pulse
2V/Division
20µsec/Division
— Record mode —

TP2201
Horizontal-Synchronimpuls
1 V/Teilung
20 µs/Teilung
— Aufnahme-Betriebsart —



IC701 ⑨ pin
Head switching pulse
5V/Division
5msec/Division

IC701 ⑧ pin
Drum pulse generator MM
2V/Division
5msec/Division

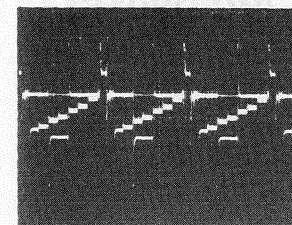
IC701 ⑦ pin
Drum pulse generator (input)
2V/Division
5msec/Division

Stift ⑨ von IC701
Kopfschaltimpuls
5 V/Teilung
5 ms/Teilung

Stift ⑧ von IC701
Trommel-Impulsgenerator-MM
2 V/Teilung
5 ms/Teilung

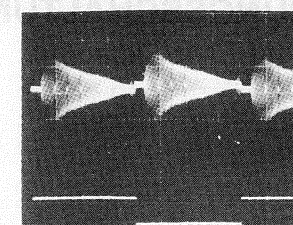
Stift ⑦ von IC701
Trommel-Impulsgenerator (Eingang)
2 V/Teilung
5 ms/Teilung

Y/C, AUDIO PWB / Y/C- UND TON-LEITERPLATTEN



TP201
White/Dark clip signal
200mV/Division
20µsec/Division
— Record mode —

TP201
Weiß/Dunkel-Begrenzungs-signal
200 mV/Teilung
20 µs/Teilung
— Aufnahme-Betriebsart —

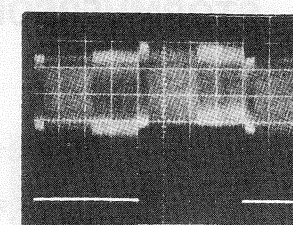


TP203
Playback preamp. signal
100mV/Division
5msec/Division

TP201
Head switching pulse
5V/Division
5msec/Division
— Playback mode —

TP203
Wiedergabe-Vorverstärkersignal
100 mV/Teilung
5 ms/Teilung

TP201
Kopfschaltimpuls
5 V/Teilung
5 ms/Teilung
— Wiedergabe-Betriebsart —

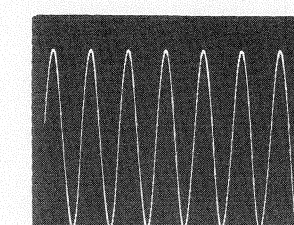


TP203
Playback preamp. signal
50mV/Division
5msec/Division

TP201
Head switching pulse
5V/Division
5msec/Division
— Playback mode —

TP203
Wiedergabe-Vorverstärkersignal
50 mV/Teilung
5 ms/Teilung

TP201
Kopfschaltimpuls
5 V/Teilung
5 ms/Teilung
— Wiedergabe-Betriebsart —



Connector BA ④, ⑤ pin
(Between Audio erase head and
Ground.)
10V/Division
10µsec/Division
— Record mode —

Stifte ④ und ⑤ vom BA-Verbinder
(Zwischen dem Tonlöschkopf und
der Masse)
10 V/Teilung
10 µs/Teilung
— Aufnahme-Betriebsart —

PARTS LIST**TEILELISTE****PARTS REPLACEMENT**

Replacement parts which have these special safety characteristics identified in this manual; electrical components having such features are identified by Δ in the Replacement Parts List.

The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following information.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION
5. CODE

AUSTAUSCH VON TEILEN

Ersatzteile, die besondere Sicherheitseigenschaften haben, sind in dieser Anleitung markiert. Elektrische Komponenten mit solchen Eigenschaften sind in den Ersatzteil durch " Δ " gekennzeichnet. Der Gebrauch von Ersatzteilen, die nicht dieselben Sicherheitseigenschaften haben wie die vom Hersteller empfohlenen und in der Bedienungsanleitung angegebenen, können zur Ursache von Blitzeinschlägen, Bränden und anderen Unfällen werden.

"WIE MAN ERSATZTEILE BESTELLT"

Damit Ihre Bestellung prompt und korrekt ausgeführt wird, geben Sie bitte folgende Informationen.

1. MODELL-NR.
2. REF.-NR.
3. ERSATZTEIL-NR.
4. BESCHREIBUNG
5. KODE

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
PRINTED WIRING BOARD ASS'Y (Not Replacement Item)			FLACHBAUGRUPPEN (Keine Ersatzteile)	
PWB-A	DUNTK 2647HE50	System control, Servo circuit (VC-D802G(BK))	Systemsteuerung, Servoschaltung (VC-D802G(BK))	—
PWB-A	DUNTK 2647HE52	System control, Servo circuit (VC-D801S(BK))	Systemsteuerung, Servoschaltung (VC-D801S(BK))	—
PWB-B	DUNTK 2664TM50	Y/C, Audio circuit	Y/G, Tonschaltung	—
PWB-H	DUNTK 2677HE55	Operation circuit (VC-D802G(BK))	Betriebschaltung (VC-D802G(BK))	—
PWB-H	DUNTK 2544HE56	Operation circuit (VC-D801S(BK))	Betriebschaltung (VC-D801S(BK))	—
PWB-T	DUNTK 2545HE55	Timer circuit (VC-D802G(BK))	Timerschaltung (VC-D802G(BK))	—
PWB-T	DUNTK 2548HE56	Timer circuit (VC-D801S(BK))	Timerschaltung (VC-D801S(BK))	—
PWB-S	DUNTK 2648HE50	Digital circuit (A)	Digitalschaltung (A)	—
PWB-S	DUNTK 2649HE51	Digital circuit (B)	Digitalschaltung (B)	—
PWB-X	DUNTK 2486TM52	Head amplifier circuit	Vorverstärkschaltung	—
PWB-P	RDE NT 0259GEZZ	Power circuit (VC-D802G(BK))	Hauptstromschaltung (VC-D802G(BK))	—
PWB-P	RDE NT 0260GEZZ	Power circuit (VC-D801S(BK))	Hauptstromschaltung (VC-D801S(BK))	—
	DUNTK 2577HE52	F-SYN/VPS circuit (VC-D802G(BK))	F-SYN/VPS-Schaltung (VC-D802G(BK))	—
	DUNTK 2748HE00	System control sub circuit	Systemsteuerungunter schaltung	—
	DUNTK 2738HE00	Digital(A) sub circuit	Digitalunterschaltung (A)	—
PWB-A		PWB-A		
TRANSISTORS		TRANSISTOREN		
Q701	VS2SA933SQR1E	2SA933SQR	2SA933SQR	AB
Q702	VS2C1740SQR1E	2SC1740SQR	2SC1740SQR	AC
Q703	VS2SA933SQR1E	2SA933SQR	2SA933SQR	AB
706	VS2SA933SQR1E	2SA933SQR	2SA933SQR	AB
Q801	VS2SA933SQR1E	2SA933SQR	2SA933SQR	AB
Q802	VSDTC144ES/-1	DTC144ES	DTC144ES	AB
Q803	VS2C1740SQR1E	2SC1740SQR	2SC1740SQR	AC
Q804	VS2SC2001LK-1	2SC2001LK	2SC2001LK	AA
Q807	VSDTC144ES/-1	DTC144ES	DTC144ES	AB
Q808	VSDTC114ES/-1	DTC114ES	DTC114ES	AB
Q809	VSDTC114ES/-1	DTC114ES	DTC114ES	AB
Q810	VSDTC144ES/-1	DTC114ES	DTC114ES	AB
Q951	VS2SA988-E/-1	2SA988-E	2SA988-E	AB
Q953	VS2SB564-KL-1	2SB564-K	2SB564-K	AB
Q954	VSDTC144ES/-1	DTC144ES	DTC144ES	AB
Q955	VS2SB564-KL-1	2SB564-K	2SB564-K	AB
Q956	VS2BS564-KL-1	2SB564-K	2SB564-K	AB
Q957	VSDTC114ES/-1	DTC114ES	DTC114ES	AB
Q958	VS2SA952LK/-1	2SA952LK (VC-D802G)	2SA952LK (VC-D802G)	AB

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
Q959	VSDTC144ES / - 1	DTC144ES (VC-D802G)	DTC144ES (VC-D802G)	AB
Q1451	VS2SA933SQR1E	2SA933SQR	2SA933SQR	AB
Q1454	VS2SC383 - WT - 1	2SC383-T (VC-D801S)	2SC383-T (VC-D801S)	AE
Q1551	VS2SA933SQR1E	2SA933SQR (VC-D802G)	2SA933SQR (VC-D802G)	AB
Q1552	VS2SC2001LK - 1	2SC2201LK (VC-D802G)	2SC2201LK (VC-D802G)	AA
Q1533	VS2C1740SQR1E	2SC1740SQR (VC-D802G)	2SC1740SQR (VS-D802G)	AC
Q1554	VSDTC144ES / - 1	DTC144ES (VC-D802G)	DTC144ES (VC-D802G)	AB
Q1555	VSDTC144ES / - 1	DTC144ES (VC-D801S)	DTC144ES (VC-D801S)	AB
Q1556	VS2SD655 - DE1E	2SC655-D (VC-D802G)	2SC655-D (VC-D802G)	AC
Q4001	VS2SA933SQR1E	2SA933SQR (VC-D802G)	2SA933SQR (VC-D802G)	AB
Q4002	VS2SA933SQR1E	2SA933SQR (VC-D802G)	2SA933SQR (VC-D802G)	AB
Q4401	VS2SA933SQR1E	2SA933SQR (VC-D801S)	2SA933SQR (VC-D801S)	AB
Q4402	VS2SA933SQR1E	2SA933SQR (VC-D801S)	2SA933SQR (VC-D801S)	AB
Q5905	VSDTC144ES / - 1	DTC144ES (VC-D801S)	DTC144ES (VC-D801S)	AB
Q6601	VSDTC144ES / - 1	DTC144ES	DTC144ES	AB
Q6602	VS2SD655 - DE1E	2SD655-D	2SD655-D	AC
Q6603	VS2SD655 - DE1E	2SD655-D	2SD655-D	AC
Q6604	VSDTA144ES / - 1	DTA144ES	DTA144ES	AB
Q6605	VSDTC144ES / - 1	DTC144ES (VC-D802G)	DTC144ES (VC-D802G)	AB
Q6606	VS2SC2458Y / - 1	2SC2458Y (VC-D802G)	2SC2458Y (VC-D802G)	AB
Q8801	VS2SA952LK / - 1	2SA952LK	2SA952LK	AB
Q8802	VSDTA124ES / - 1	DTA124ES	DTA124ES	AB
Q8803	VSDTA124ES / - 1	DTA124ES	DTA124ES	AB
Q8805	VSDTC144ES / - 1	DTC144ES	DTC144ES	AB
Q8806	VS2SA952LK / - 1	2SA952LK	2SA952LK	AB
Q8807	VSDTC144ES / - 1	DTC144ES	DTC144ES	AB
Q8808	VSDTA144ES / - 1	DTA144ES	DTA144ES	AB
Q8809	VSDTA144ES / - 1	DTA144ES (VC-D801S)	DTA144ES (VC-D801S)	AB
		INTEGRATED CIRCUITS	INTEGRIERTE SCHALTkreISE	
IC701	RH- i X0322GEZZ			AS
IC702	VHi LA7116 / - 1			AH
IC801	RH- i X0395GEZZ	(VC-D802G)	(VC-D802G)	AV
IC801	RH- i X0399GEZZ	(VC-D801S)	(VC-D801S)	AV
IC802	VHi BA6238AU1E			AH
IC803	RH- i X0371GEZZ			AL
IC951	RH- i X0037CEZZ	(VC-D801S)	(VC-D801S)	AF
IC1451	VHi UPC1484CA1			AM
IC2201	VHi BA7021 / - 1			AE
IC5901	RH- i X0345GEZZ			AW
		DIODES	DIODEN	
D701	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
D702	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
D706	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
D707	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
D801	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
D802	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
D804	RH- EX0163GEZZ	(HZS12EB3)	(HZS12EB3)	AA
D805	RH- EX0145GEZZ	(HZS7,5EB1)	(HZS7,5EB1)	AA
D806	VHD1SS119 / - 1	(1SS119)	(1SS119)	AB
D807	VHD1SS119 / - 1	(1SS119)	(1SS199)	AB
D808	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
D951	RH- EX0141GEZZ	(HZS6,2EB3)	(HZS6,2EB3)	AB
D952	RH- EX0049CEZZ	(RD5,1EB)	(RD5,1EB)	AR
D953	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
D954	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
D955	RH- DX0142CEZZ	(1SS133) (VC-D802G)	(1SS133) (VC-D802G)	AA
D956	RH- DX0142CEZZ	(1SS133) (VC-D802G)	(1SS133) (VC-D802G)	AA
D957	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
D958	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
D960	RH- DX0142CEZZ	(1SS133) (VC-D802G)	(1SS133) (VC-D802G)	AA
D961	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
D1455	RH-DX0142CEZZ	(1SS133) (VC-D802G)	(1SS133) (VC-D802G)	AA
D1456	RH-DX0142CEZZ	(1SS133) (VC-D802G)	(1SS133) (VC-D802G)	AA
D1465	RH-DX0142CEZZ	(1SS133) (VC-D802G)	(1SS133) (VC-D802G)	AA
D2201	RH-EX0168GEZZ	(HZS15EB2)	(HZS15EB2)	AA
D2202	RH-EX0168GEZZ	(HZS15EB2)	(HZS15EB2)	AA
D4401	RH-EX0168GEZZ	(HZS15EB2)	(HZS15EB2)	AA
D4402	RH-EX0168GEZZ	(HZS15EB2)	(HZS15EB2)	AA
D8801	RH-EX0168GEZZ	(HZS15EB2)	(HZS15EB2)	AA
D8802	RH-DX0142CEZZ	(1SS133)	(1SS133)	AA
D8803	RH-DX0142CEZZ	(1SS133) (VC-D802G)	(1SS133) (VC-D802G)	AA
D8804	RH-DX0142CEZZ	(1SS133) (VC-D801S)	(1SS133) (VC-D801S)	AA
D8805	RH-DX0142CEZZ	(1SS133) (VC-D801S)	(1SS133) (VC-D801S)	AA
		CAPACITORS	KONDENSATOREN	
C707	VCEAEA0JW107M	100µF, 6.3V, Electrolytic	100µF, 6.3V, elektrolytisch	AB
C720	VCE9EA1HW105M	1µF, 50V, Electrolytic (non-polar)	1µF, 50V, elektrolytisch (ungepolt)	AC
C810	VCE9EA1HW105M	1µF, 50V, Electrolytic (non-polar)	1µF, 50V, elektrolytisch (ungepolt)	AC
C811	VCE9EA1HW105M	1µF, 50V, Electrolytic (non-polar)	1µF, 50V, elektrolytisch (ungepolt)	AC
C951	VCEAGA1JW107M	100µF, 63V, Electrolytic	100µF, 63V, elektrolytisch	AC
C957	VCEAGA1AW107M	100µF, 10V, Electrolytic	100µF, 10V, elektrolytisch	AB
C1455	VCE9EA1HW105M	1µF, 50V, Electrolytic (non-polar) (VC-D802G)	1µF, 50V, elektrolytisch (ungepolt) (VC-D802G)	AC
C1460	VCQPKA2AA682J	.0068µF, 100V, Polypro Film	.0068µF, 100V, Polypropylenhäutchen	AB
C2201	VCE9EA1HW224M	.22µF, 50V, Electrolytic (non-polar)	.22µF, 50V, elektrolytisch (ungepolt)	AC
C2205	VCE9EA1HW224M	.22µF, 50V, Electrolytic (non-polar)	.22µF, 50V, elektrolytisch (ungepolt)	AC
C4401	VCEAEA1CW107M	100µF, 16V, Electrolytic	100µF, 16V, elektrolytisch (ungepolt)	AC
C4403	VCEAGA0JW477M	470µF, 6.3V, Electrolytic	470µF, 6.3V, elektrolytisch (ungepolt)	AC
C5551	VCEAEA0JW107M	100µF, 6.3V, Electrolytic (VC-D802G)	100µF, 6.3V, elektrolytisch (ungepolt)	AB
		TRIMMERS	TRIMMER	
C5904	RT ̄-H1005AEZZ	Trimmer, OSD Charactor generator adj.	Trimmer, Einstellung vom OSD-Schriftzeichengenerator	AC
C5911	RT ̄-H1005AEZZ	Trimmer, OSD Clock oscillator adj.	Trimmer, Einstellung vom OSD-Uhroszillator	AC
		CONTROLS	REGLER	
R707	RVR-M4421GEZZ	100K ohm, Pot., Tracking preset	100 kOhm, Potentiometer, Einstellung der Standbild-Spulage	AB
R720	RVR-M4198GEZZ	100K ohm, Pot., Switching point	100 kOhm, Potentiometer, Schaltpunkt	AD
R1464	RVR-M4306GEZZ	4.7K ohm, Pot., SYNC FRO adj.	4,7 kOhm, Potentiometer, Synchronization-FRO-Einstellung	AC
R1561	RVR-M4370GEZZ	6.8K ohm, Pot., VHF AGC adj. (VC-D802G)	6,8 kOhm, Potentiometer, Selbsttätige Verstärkung-Sregelung für VHF-Hochfrequenz (VC-D802G)	AB
R1564	RVR-M4370GEZZ	6.8K ohm, Pot., UHF AGC adj. (VC-D802G)	6,8 kOhm, Potentiometer, Selbsttätige Verstärkung-Sregelung für VHF-Hochfrequenz (VC-D802G)	AB
		COILS	SPULEN	
L801	VP-DF101K0000	100µH	100µH	AB
L1451	VP-DF120K0000	12µH (VC-D801S)	12µH (VC-D801S)	AB
L1551	VP-XF330K0000	33µH (VC-D802G)	33µH (VC-D802G)	AB
L1552	VP-XF120K0000	12µH (VC-D802G)	12µH (VC-D802G)	AB
L1553	VP-XF120K0000	12µH (VC-D802G)	12µH (VC-D802G)	AB
L1554	VP-DF120K0000	12µH (VC-D802G)	12µH (VC-D802G)	AB
1561	VP-DF120K0000	12µH (VC-D802G)	12µH (VC-D802G)	AB
L2201	VP-DF221K0000	220µH	220µH	AB
L4401	VP-DF221K0000	220µH	220µH	AB
L5552	VP-DF221K0000	220µH	220µH	AB

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE CODE
L5901	VP - MK 101K 0000	10 μ H	10 μ H	AB
L6602	VP - XF 150K 0000	15 μ H (VC-D802G)	15 μ H (VC-D802G)	AB
FL801	RF i L C 0024 GE ZZ	Filter	Filter	AE
		MISCELLANEOUS	SONSTIGE TEILE	
	RUNTK0436GEZZ	IF Pack unit (VC-D802G)	Zwischerfrequenz- β augruppe (VC-D802G)	AZ
	RUNTK0437GEZZ	IF Pack unit (VC-D801S)	Zwischerfrequenz- β augruppe (VC-D801S)	AY
	VTUATEME3 - 019	Tuner (VC-D802G)	Tuner (VC-D802G)	BN
	VTUATEME1 - 009	Tuner (VC-D801S)	Tuner (VC-D801S)	BE
	RCNVRO014GEZZ	RF convertor	Hochfrequenzwandler	BA
X5901	RCRSB0008CEZZ	Crystal oscillator	Quarzoszillator	AP
R5918	RMP TC0038CEZZ	Package circuit	Paketschaltkreis	AB
AA	QPL GN1078GEZZ	Plug (10 Pin)	Stecker (10-polig)	AC
AB	QS \bar{O} CN1013REZZ	Socket (10 Pin)	Anschluß (10-polig)	AD
AC	QPL GN0678GEZZ	Plug (6 Pin)	Stecker (6-polig)	AB
AD	QPL GN0778GEZZ	Plug (7 Pin)	Stecker (7-polig)	AC
AE	QS \bar{O} CN0713REZZ	Socket (7 Pin)	Anschluß (7-polig)	AC
AF	QPL GN0979GEZZ	Plug (9 Pin)	Stecker (9-polig)	AC
AG	QPL GN0478GEZZ	Plug (4 Pin)	Stecker (4-polig)	AB
AH	QPL GN0978GEZZ	Plug (9 Pin)	Stecker (9-polig)	AC
AI	QPL GN0478GEZZ	Plug (4 Pin)	Stecker (4-polig)	AB
AJ	QPL GN0678GEZZ	Plug (6 Pin)	Stecker (6-polig)	AB
AK	QPL GN0378GEZZ	Plug (3 Pin)	Stecker (3-polig)	AB
AL	QPL GN0678GEZZ	Plug (6 Pin) (VC-D802G)	Stecker (6-polig) (VC-D802G)	AB
AL	QPL GN0578GEZZ	Plug (5 Pin) (VC-D801S)	Stecker (5-polig) (VC-D801S)	AB
AM	QPE GN0678GEZZ	Plug (6 Pin) (VC-D801S)	Stecker (6-polig) (VC-D801S)	AB
AN	QS \bar{O} CN1594GEZZ	Socket (15 Pin) (VC-D802G)	Anschluß (15-polig) (VC-D802G)	AC
AP	QPL GN0278GEZZ	Plug (2 Pin) (VC-D802G)	Anschluß (2-polig) (VC-D802G)	AA
AO	QPL GN0978GEZZ	Plug (9 Pin) (VC-D802G)	Anschluß (9-polig) (VC-D802G)	AC
AQ	QPL GN0478GEZZ	Plug (4 Pin)	Anschluß (4-polig)	AB
AR	QPL GN1278GEZZ	Plug (12 Pin)	Anschluß (12-polig)	AC
AX	QPL GN0278GEZZ	Plug (2 Pin) (VC-D801S)	Anschluß (2-polig) (VC-D801S)	AA
J6601	QS \bar{O} CZ2112GEZZ	Socket (21 Pin) (VC-D802G)	Anschluß (21-polig) (VC-D802G)	AF
		PWB-B	PWB-B	
		TRANSISTORS	TRANSISTOREN	
Q204	VS 2SD471 - KL - 1	2SD471-KL	2SD471-KL	AD
Q205	VS 2SC1623L51E	2SC1623L	2SC1623L	AB
Q502	VS 2SC1623L51E	2SC1623L	2SC1623L	AB
Q504	VS 2SC2001LK - 1	2SC2001LK	2SC2001LK	AA
Q505	VS 2SC1623L51E	2SC1623L	2SC1623L	AB
Q506	VS 2SA812 - M51E	2SA812-M	2SA812-M	AC
Q507	VS 2SC1623L51E	2SC1623L	2SC1623L	AB
Q508	VS 2SC1623L51E	2SC1623L	2SC1623L	AB
Q602	VS 2SD592ARS - 1	2SD592ARS	2SD592ARS	AC
Q5501	VS 2C1740SQR1E	2SC1740SQR	2SC1740SQR	AC
		INTEGRATED CIRCUITS	INTEGRIERTE SCHALTKREISE	
IC201	VHi HA118062 - 1			AT
IC501	VHi TA8644N / - 1			AP
IC601	VHi BA7751ALS1			AG
IC602	VHi BA7755 / / - 1			AD
IC5501	VHi BA7007 / / - 1			AM
		DIODES	DIODEN	
D203	VHD1SS119 / / - 1	(1SS119)	(1SS119)	AB
D204	VHD1SS119 / / - 1	(1SS119)	(1SS119)	AB
D207	RH- EX0374GEZZ			AA
D501	RH- EX0374GEZZ			AA

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
D503	VHD1SS198 / - 1	(1SS198)	(1SS198)	AB
D505	VHD1SS119 / - 1	(1SS119)	(1SS119)	AB
D506	VHD1SS119 / - 1	(1SS119)	(1SS119)	AB
D5501	VHD1SS119 / - 1	(1SS119)	(1SS119)	AB
D5502	VHD1SS119 / - 1	(1SS119)	(1SS119)	AB
D5503	VHD1SS119 / - 1	(1SS119)	(1SS119)	AB
		CAPACITORS	KONDENSATOREN	
C235	VCE9EA1EW475M	4.7 μ F, 25V, Electrolytic (non-polar)	4,7 μ F, 25V, elektrolytisch (ungepolt)	AC
C240	VCEAEA1AW107M	100 μ F, 10V, Electrolytic	100 μ F, 10V, elektrolytisch (ungepolt)	AB
C609	VCEAGA1CW107M	100 μ F, 16V, Electrolytic	100 μ F, 16V, elektrolytisch (ungepolt)	AB
		CONTROLS	REGLER	
R209	RVR - M4408GEZZ	680 ohm, Pot., Playback level adj.	680 Ohm, Potentiometer, Einstellung des Wiedergabepegels	AB
R216	RVR - M4408GEZZ	680 ohm, Pot., FM carrier adj.	680 Ohm, Potentiometer, FM Frägereinstellung	AB
R222	RVR - M4191GEZZ	6.8K ohm, Pot., Deviation adj.	6,8 kOhm, Potentiometer, Hubeinstellung	AD
R229	RVR - M4411GEZZ	2.2K ohm, Pot., White clip adj.	2,2 kOhm, Potentiometer, Weißkappeinstellung	AB
R253	RVR - M4407GEZZ	470 ohm, Pot., EE level adj.	470 Ohm, Potentiometer, E-E-Pegeleinstellung	AB
R263	RVR - M4430GEZZ	1K ohm, Pot., FM level adj.	1 kOhm, Potentiometer, FM-Pegeleinstellung	AB
R507	RVR - M4380GEZZ	100K ohm, Pot., APC adj.	100 kOhm, Potentiometer, APC-Einstellung	AC
R515	RVR - M4432GEZZ	2.2K ohm, Pot., Rec Chroma Level adj.	2,2 kOhm, Potentiometer, Aufzeichnungs-ChrominanzEinstellung	AB
R609	RVR - M4439GEZZ	33K ohm, Pot., Playback level adj.	33 kOhm, Potentiometer, Einstellung des Wiedergabepegels	AB
R622	RVR - M4446GEZZ	470K ohm, Pot., Bias adj.	470 kOhm, Potentiometer, Hubeinstellung	AB
		COILS AND TRANSFORMER	SPULEN UND TRANSFORMATOREN	
DL201	RCiLZ0183GEZZ	Coil	Spule	AX
DL501	RCiLZ0191GEZZ	Coil	Spule	AM
FL601	RCiLF0076GEZZ	Coil	Spule	AF
FL602	RCiLi0060GEZZ	IF Coil	IF-Spule	AD
FL5501	RFiLC0029TAZZ	Filter	Filter	AD
L201	VP - XF101K0000	100 μ H	100 μ H	AB
L202	VP - XF560K0000	56 μ H	56 μ H	AB
L203	VP - XF8R2K0000	8.2 μ H	8,2 μ H	AB
L204	VP - XF680K0000	68 μ H	68 μ H	AB
L205	VP - XF150K0000	15 μ H	15 μ H	AB
L208	VR - XF151K0000	150 μ H	150 μ H	AB
L209	VP - XF820K0000	82 μ H	82 μ H	AB
L210	VP - XF151K0000	150 μ H	150 μ H	AB
L211	VP - DF221K0000	220 μ H	220 μ H	AB
L212	VP - DF560K0000	56 μ H	56 μ H	AB
L502	VP - MK180J0000	18 μ H	18 μ H	AB
L504	VP - XF390K0000	39 μ H	39 μ H	AB
L505	VP - XF221K0000	220 μ H	220 μ H	AB
L506	VP - XF221K0000	220 μ H	220 μ H	AB
L507	VP - MK561K0000	56 μ H	56 μ H	AB
L601	VP - YF562J0000	5.6mH	5,6mH	AC
L602	VP - YF471K0000	470 μ H	470 μ H	AC
L603	VP - DF221K0000	220 μ H	220 μ H	AB
L5501	VP - DF221K0000	220 μ H	220 μ H	AB
L5503	VP - YF153J0000	12mH	12mH	AC
T601	RTRNH0046GEZZ	Oscillator transformer	Oszillatortransformatore	AE
		MISCELLANEOUS	SONSTIGE TEILE	
FL201	RMP TD0254GEZZ	Package circuit	Paketschaltkreis	AG
FL501	RMP TD0239GEZZ	Package circuit	Paketschaltkreis	AG
FL502	RMP TD0256GEZZ	Package circuit	Paketschaltkreis	AF
X501	RCRSB0002CEZZ	Crystal oscillator	Quarzoszillator	AM

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
BA	QPLGN0580GEZZ	Plug (5 Pin)	Stecker (5-polig)	AB
BB	QPLGN0778GEZZ	Plug (7 Pin)	Stecker (7-polig)	AC
BC	QS0CN0779GEZZ	Socket (7 Pin)	Anschluß (7-polig)	AC
BD	QS0CN0979GEZZ	Socket (9 Pin)	Anschluß (9-polig)	AB
BE	QS0CN0879GEZZ	Socket (8 Pin)	Anschluß (8-polig)	AC
BF	QS0CN0679GEZZ	Socket (6 Pin)	Anschluß (6-polig)	AC
		PWB-H	PWB-H	
		DIODES	DIODEN	
D8101	RH-PX0139GEZZ	(1SS133) (VC-D801S)	(1SS133) (VC-D801S)	AC
D8102	RH-PX0124GEZZ			AB
D8106	RH-PX0124GEZZ			AB
D8109	RH-PX0124GEZZ			AB
D8110	RH-DX0142CEZZ			AA
		CONTROL	REGLER	
R8116	RVR-B4286GEZZ	20K ohm, Pot., Picture tone adj.	20 kOhm, Pot., Farbtoneinstellung	AD
		MISCELLANEOUS	SONSTIGE TEILE	
SW8101	QSW-K0033GEZZ	Switch, Power	Schalter, Netz	AB
SW8102	QSW-K0033GEZZ	Switch, Eject	Schalter, Auswurf	AB
SW8104	QSW-S0122GEZZ	Switch, Beeper	Schalter, Ton	AD
ALM8101	RALMB0010GEZZ	Alarm	Alarm	AD
		PWB-T	PWB-T	
		TRANSISTORS	TRANSISTOREN	
Q5001	VS2SA937-Q/-1	2SA937-Q	2SA937-Q	AC
Q5002	VSDTC144F/-1	DTC144F	DTC144F	AB
Q5003	VS2SA937-Q/-1	2SA937-Q	2SA937-Q	AC
Q5004	VSDTC124F/-1	DTC1214F	DTC1214F	AC
Q5005	VSDTC144F/-1	DTC144F	DTC144F	AB
		INTEGRATED CIRCUIT	BIINTEGRIERTE SCHALTKEIS	
IC5001	RH-iX0369GEZZ	(VC-D802G)	(VC-D802G)	AY
IC5001	RH-iX0370GEZZ	(VC-D801S)	(VC-D801S)	AY
IC5002	RH-iX0738CEZZ	(VC-D801S)	(VC-D801S)	AU
		DIODES	DIODEN	
D5001	RH-DX0053GEZZ	(VC-D801S)	(VC-D801S)	AA
D5002	RH-DX0053GEZZ			AA
D5006	RH-DX0053GEZZ			AA
5010	RH-DX0053GEZZ			
D5011	RH-DX0053GEZZ			AA
D5012	RH-DX0053GEZZ	(VC-D801S)	(VC-D801S)	AA
D5013	RH-DX0053GEZZ			AA
D5014	RH-DX0053GEZZ			AA
D5015	RH-DX0053GEZZ			AA
D5016	RH-DX0053GEZZ			AA
D5017	RH-DX0053GEZZ	(VC-D802G)	(VC-D802G)	AA
D5018	RH-DX0053GEZZ	(VC-D801S)	(VC-D801S)	AA
D5019	RH-DX0053GEZZ			AA
D5020	RH-DX0053GEZZ			AA
D5021	RH-DX0053GEZZ			AA
D5022	RH-DX0053GEZZ			AA

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
D5024	RH- DX0053GEZZ	(VC-D801S)	(VC-D801S)	AA
D5025	RH- DX0053GEZZ	(VC-D801S)	(VC-D801S)	AA
D5027	RH- DX0053GEZZ	(VC-D801S)	(VC-D801S)	AA
D5031	RH- DX0053GEZZ	(VC-D801S)	(VC-D801S)	AA
D5032	RH- DX0053GEZZ	(VC-D801S)	(VC-D801S)	AA
		CONTROL	REGLER	
R5022	RVR - B4287GEZZ	200K ohm, Pot., PB tracking VR. (VC-D802G)	200 kOhm, Potentiometer, Spurlage-VR der Wiedergabe (VC-D802G)	AD
R5029	RVR - B4287GEZZ	200K ohm, Pot., PB tracking VR. (VC-D801S)	200 kOhm, Potentiometer, Spurlage-VR der Wiedergabe (VC-D801S)	AD
		TRIMMER	TRIMMER	
C5004	RT ̄- H1005AEZZ	Trimmer (VC-D802G)	Trimmer (VC-D802G)	AC
C5006	RT ̄- H1005AEZZ	Trimmer (VC-D801S)	Trimmer (VC-D801S)	AC
		FILTER	FILTER	
FL5001	RFi LC0075GEZZ	Filter (VC-D802G)	Filter (VC-D802G)	AD
FL5001	RFi LC0024GEZZ	Filter (VC-D801S)	Filter (VC-D801S)	AE
		MISCELLANEOUS	SONSTIGE TEILE	
DG5001	RRMCU0034GEZZ	Remote receiver	Fernbedienungsempfänger	AM
DG5001	VVKFV187 / / / - 1	Display (VC-D802G)	Anzeige (VC-D802G)	AY
DG5001	VVKFV183 / / / - 1	Display (VC-D801S)	Anzeige (VC-D801S)	AY
R5001	RMP TC0021CEZZ	Package circuit	Paketschaltkreis	AB
R5022	RMP TC0037CEZZ	Package circuit (VC-D801S)	Paketschaltkreis (VC-D801S)	AC
R5024	RMP TC0038CEZZ	Package circuit (VC-D802G)	Paketschaltkreis (VC-D802G)	AB
X5001	RCRSB0006GEZZ	Cristal	Quarz	AK
SW5004	QSW- K0033GEZZ	Switch, Record return (VC-D802G)	Schalter, Aufzeichnung-Rückführung (VC-D802G)	AB
SW5005	QSW- K0033GEZZ	Switch, Stop (VC-D802G)	Schalter, Stopp (VC-D802G)	AB
SW5006	QSW- K0033GEZZ	Switch, Fast-Forward (VC-D802G)	Schalter, Schnellvorlauf (VC-D802G)	AB
SW5007	QSW- K0033GEZZ	Switch, Record (VC-D802G)	Schalter, Aufzeichnung (VC-D802G)	AB
SW5008	QSW- K0033GEZZ	Switch, Pause (VC-D802G)	Schalter, Pause (VC-D802G)	AB
SW5009	QSW- K0033GEZZ	Switch, Rewind (VC-D802G)	Schalter, Rückspulung (VC-D802G)	AB
SW5010	QSW- K0033GEZZ	Switch, Playback (VC-D802G)	Schalter, Wiedergabe (VC-D802G)	AB
SW5011	QSW- K0033GEZZ	Switch, Channel up (VC-D802G)	Schalter, Kanal-Auf. (VC-D802G)	AB
SW5012	QSW- K0033GEZZ	Switch, Channel down (VC-D802G)	Schalter, Kanal-Ab. (VC-D802G)	AB
SW5015	QSW- K0033GEZZ	Switch, Count display (VC-D802G)	Schalter, Anzeige des Zählwerks (VC-D802G)	AB
SW5016	QSW- K0033GEZZ	Switch, Reset (VC-D802G)	Schalter, Rückstellung (VC-D802G)	AB
SW5017	QSW- K0033GEZZ	Switch, Memory (VC-D802G)	Schalter, Speicher (VC-D802G)	AB
SW5018	QSW- K0033GEZZ	Switch, All clear (VC-D802G)	Schalter, Ganz Löschung (VC-D802G)	AB
SW5019	QSW- K0033GEZZ	Switch, Memory open (VC-D802G)	Schalter, Speichereröffnung (VC-D802G)	AB
SW5020	QSW- K0033GEZZ	Switch, Fine tuning (-) (VC-D802G)	Schalter, Feinabstimmung (-) (VC-D802G)	AB
SW5021	QSW- K0033GEZZ	Switch, Fine tuning (+) (VC-D802G)	Schalter, Feinabstimmung (+) (VC-D802G)	AB
SW5022	QSW- K0033GEZZ	Switch, Memory (VC-D802G)	Schalter, Speicher (VC-D802G)	AB
SW5023	QSW- K0033GEZZ	Switch, Skip (VC-D802G)	Schalter, Sprung (VC-D802G)	AB
SW5024	QSW- S0123GEZZ	Switch, Blue mute on-Auto-color (VC-D802G)	Schalter, Blau-Stummer auf Auto-Farbe (VC-D802G)	AD
SW5001	QSW- K0033GEZZ	Switch, Set (VC-D801S)	Schalter, Stellen (VC-D801S)	AB
SW5002	QSW- K0033GEZZ	Switch, (-) (VC-D801S)	Schalter, (-) (VC-D801S)	AB
SW5003	QSW- K0033GEZZ	Switch, (+) (VC-D801S)	Schalter, (+) (VC-D801S)	AB
SW5004	QSW- K0033GEZZ	Switch, Program (VC-D801S)	Schalter, Program (VC-D801S)	AB
SW5005	QSW- K0033GEZZ	Switch, MT (+) (VC-D801S)	Schalter, MT (+) (VC-D801S)	AB
SW5006	QSW- K0033GEZZ	Switch, M (-) (VC-D801S)	Schalter, M (-) (VC-D801S)	AB
SW5007	QSW- K0033GEZZ	Switch, Timer ON/OFF (VC-D801S)	Schalter, Zeituhr aus/auf (VC-D801S)	AB
SW5008	QSW- K0033GEZZ	Switch, Program clear (VC-D801S)	Schalter, Programmlöschung (VC-D801S)	AB
SW5012	QSW- K0033GEZZ	Switch, Record return (VC-D801S)	Schalter, Aufzeichnung-Pückführung (VC-D801S)	AB

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
SW5013	QSW- K 0 0 3 3 G E Z Z	Switch, Clock (VC-D801S)	Schalter, Wand-Uhr (VC-D801S)	AB
SW5014	QSW- K 0 0 3 3 G E Z Z	Switch, Stop (VC-D801S)	Schalter, Stopp (VC-D801S)	AB
SW5015	QSW- K 0 0 3 3 G E Z Z	Switch, Fast-Forward (VC-D801S)	Schalter, Schnellvorlauf (VC-D801S)	AB
SW5016	QSW- K 0 0 3 3 G E Z Z	Switch, Record (VC-D801S)	Schalter, Aufzeichnung (VC-D801S)	AB
SW5017	QSW- K 0 0 3 3 G E Z Z	Switch, Pause (VC-D801S)	Schalter, Pause (VC-D801S)	AB
SW5018	QSW- K 0 0 3 3 G E Z Z	Switch, Rewind (VC-D801S)	Schalter, Rückspulung (VC-D801S)	AB
SW5019	QSW- K 0 0 3 3 G E Z Z	Switch, PS (VC-D801S)	Schalter, PS (VC-D801S)	AB
SW5020	QSW- K 0 0 3 3 G E Z Z	Switch, Channel up (VC-D801S)	Schalter, Kanal-Auf. (VC-D801S)	AB
SW5021	QSW- K 0 0 3 3 G E Z Z	Switch, Channel down (VC-D801S)	Schalter, Kanal-Ab. (VC-D801S)	AB
SW5025	QSW- K 0 0 3 3 G E Z Z	Switch, Display (VC-D801S)	Schalter, Anzeige (VC-D801S)	AB
SW5026	QSW- K 0 0 3 3 G E Z Z	Switch, Reset (VC-D801S)	Schalter, Rückstellung (VC-D801S)	AB
SW5027	QSW- K 0 0 3 3 G E Z Z	Switch, Memory (VC-D801S)	Schalter, Speicher (VC-D801S)	AB
SW5028	QSW- K 0 0 3 3 G E Z Z	Switch, All clear (VC-D801S)	Schalter, Gunz Löschung (VC-D801S)	AB
SW5029	QSW- S 0 1 2 3 G E Z Z	Switch, Tuner preset (VC-D801S)	Schalter, Voreinstellung der Tuner (VC-D801S)	AD
SW5030	QSW- S 0 1 2 3 G E Z Z	Switch, Colour-Auto-Blue mute (VC-D801S)	Schalter, Farbe-Auto-Blau-Stummer auf (VC-D801S)	AD
TA	QPL GN 0 6 8 0 G E Z Z	Plug (6 Pin) (VC-D801S)	Stecker (6-polig) (VC-D801S)	AB
TB	QPL GN 0 7 8 0 G E Z Z	Plug (7 Pin) (VC-D802G)	Stecker (7-polig) (VC-D802G)	AC
TN	QPL GN 0 6 8 0 G E Z Z	Plug (6 Pin) (VC-D802G)	Stecker (6-polig) (VC-D802G)	AB
TV	QPL GN 0 2 8 0 G E Z Z	Plug (2 Pin) (VC-D802G)	Stecker (2-polig) (VC-D802G)	AB
	QPL GN 0 4 2 8 T A Z Z	Plug (4 Pin), TP5001-5004	Stecker (4-polig), TP5001-5004	AB
		PWB-S(1)	PWB-S(1)	
		TRANSISTORS	TRANSISTOREN	
Q2803	VS 2 C 1 7 4 0 S Q R 1 E	2SC1740SQR	2SC1740SQR	AC
Q2804	VS 2 C 1 7 4 0 S Q R 1 E	2SC1740SQR	2SC1740SQR	AC
Q2805	VS 2 C 1 7 4 0 S Q R 1 E	2SC1740SQR	2SC1740SQR	AC
Q2806	VS 2 S A 9 3 3 S Q R 1 E	2SA933SQR	2SA933SQR	AB
		INTEGRATED CIRCUITS	INTEGRIERTE SCHALTKREISE	
IC2801	RH- i X 0 3 6 6 G E Z Z			AX
IC2802	RH- i X 0 3 8 8 G E Z Z			BA
IC2803	RH- i X 0 3 8 8 G E Z Z			BA
IC2804	RH- i X 0 3 8 8 G E Z Z			BA
IC2805	VHi M5 2 6 8 1 P / - 1			AX
IC2806	VHi M5 2 6 7 8 P / - 1			AS
IC2807	VHi BA 7 0 4 1 / / - 1			AG
IC2808	VHi BA 7 0 4 1 / / - 1			AG
		DIODES	DIODEN	
D2801	RH- DX 0 1 4 2 C E Z Z	(1SS133)	(1SS133)	AA
D2802	RH- DX 0 1 4 2 C E Z Z	(1SS133)	(1SS133)	AA
D2803	RH- DX 0 1 4 2 C E Z Z	(1SS133)	(1SS133)	AA
		CAPACITORS	KONDENSATOREN	
C2802	VCS ATA 1 VE 1 0 5 K	1µF, 35V, Tantalum (non-polar)	1µF, 35V, Tantal (ungepolt)	AD
C2808	VCS ATA 1 VE 1 0 5 K	1µF, 35V, Tantalum (non-polar)	1µF, 35V, Tantal (ungepolt)	AD
C2849	VCE 9 EA 1 HW 1 0 5 M	1µF, 50V, Electrolytic (non-polar)	1µF, 50V, elektrolytisch (ungepolt)	AC
C2850	VCE 9 EA 1 HW 1 0 5 M	1µF, 50V, Electrolytic (non-polar)	1µF, 50V, elektrolytisch (ungepolt)	AC
C2857	VCS ATA 1 CE 1 0 6 K	10µF, 16V, Tantalum (non-polar)	10µF, 16V, Tantal (ungepolt)	AC
C2858	VCS ATA 1 CE 1 0 6 K	10µF, 16V, Tantalum (non-polar)	10µF, 16V, Tantal (ungepolt)	AC
		TRIMMERS	TRIMMER	
C2804	RT 0 - H 0 0 1 1 T A Z Z	Write clock VCO	Schreibuhr VCO	AD
C2810	TR 0 - H 0 0 1 1 T A Z Z	Read clock VCO	Lesenhr VCO	AD

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
		COILS	SPULEN	
FL2801	R F i L N 0 0 2 1 G E Z Z	Filter	Filter	AB
2087	R F i L N 0 0 2 1 G E Z Z	Filter	Filter	AB
FL2808	R F i L N 0 0 1 3 C E Z Z	Filter	Filter	AC
FL2809	R F i L N 0 0 1 3 C E Z Z	Filter	Filter	AC
FL2810	R F i L N 0 0 1 3 C E Z Z	Filter	Filter	AC
FL2811	R F i L N 0 0 2 1 G E Z Z	Filter	Filter	AB
2814	R F i L N 0 0 2 1 G E Z Z	Filter	Filter	AB
FL2821	R F i L N 0 0 2 1 G E Z Z	Filter	Filter	AB
2828	R F i L N 0 0 2 1 G E Z Z	Filter	Filter	AB
FL2830	R F i L N 0 0 2 1 G E Z Z	Filter	Filter	AB
FL2831	R F i L N 0 0 1 3 C E Z Z	Filter	Filter	AC
		MISCELLANEOUS	SONSTIGE TEILE	
FL2832	R M P T D 0 2 2 3 G E Z Z	Package circuit	Paketschatkreis	AE
FL2833	R M P T D 0 2 2 3 G E Z Z	Package circuit	Paketschatkreis	AE
FL2834	R M P T D 0 2 5 4 G E Z Z	Package circuit	Paketschatkreis	AG
R2815	R M P T C 0 1 2 2 G E Z Z	Package circuit	Paketschatkreis	AD
R2822	R M P T C 0 1 2 2 G E Z Z	Package circuit	Paketschatkreis	AD
R2829	R M P T C 0 1 2 2 G E Z Z	Package circuit	Paketschatkreis	AD
X2801	R C R S B 0 0 7 8 G E Z Z	Crystal oscilator	Quarzoszillator	AH
FB2801	R B L N - 0 0 1 4 E E Z Z	Balun	Störstromumspanner	AB
FB2802	R B L N - 0 0 1 4 G E Z Z	Balun	Störstromumspanner	AB
FB2803	R B L N - 0 0 1 4 G E Z Z	Balun	Störstromumspanner	AB
SB	Q S 0 C N 2 1 1 3 R E Z Z	Socket (21 Pin)	Anschluß (21-polig)	AD
		PWB-S(2)	PWB-S(2)	
		TRANSISTORS	TRANSISTOREN	
Q2601	V S 2 S A 9 3 3 S Q R 1 E	2SA933SQR	2SA933SQR	AB
Q2602	V S 2 C 1 7 4 0 S Q R 1 E	2SC1740SQR	2SC1740SQR	AC
2605	V S 2 C 1 7 4 0 S Q R 1 E	2SC1740SQR	2SC1740SQR	AC
Q2606	V S 2 S A 9 3 3 S Q R 1 E	2SA933SQR	2SA933SQR	AB
Q2702	V S 2 C 1 7 4 0 S Q R 1 E	2SC1740SQR	2SC1740SQR	AC
Q2703	V S 2 C 1 7 4 0 S Q R 1 E	2SC1740SQR	2SC1740SQR	AC
Q2704	V S 2 S A 9 3 3 S Q R 1 E	2SA933SQR	2SA933SQR	AB
Q2705	V S 2 C 1 7 4 0 S Q R 1 E	2SC1740SQR	2SC1740SQR	AC
Q2706	V S 2 C 1 7 4 0 S Q R 1 E	2SC1740SQR	2SC1740SQR	AC
Q2707	V S D T C 1 4 4 E S - / 1	DTC144ES	DTC144ES	AB
		INTEGRATED CIRCUITS	INTEGRIERTE SCHALTKREISE	
IC2601	V H i M 5 1 2 7 1 S P - 1			AR
IC2602	V H i B A 7 0 2 1 / / - 1			AE
IC2701	V H i M 5 1 2 7 2 P / - 1			AR
IC2702	V H i M 5 1 2 7 1 S P - 1			AR
IC2703	V H i B A 7 0 2 1 / / - 1			AE
IC2704	V H i B A 7 0 2 1 / / - 1			AE
		DIODE	DIODE	
D2701	R H - D X 0 1 4 2 C E Z Z	(1SS133)	(1SS133)	AA
		TRIMMERS	TRIMMER	
C2609	R T 0 - H 1 0 0 5 A E Z Z	Chroma decode clock osc adj.	Einstellung vom Chrominanz decoderuhroszillator	AC
C2727	R T 0 - H 1 0 0 5 A E Z Z	Chroma carrier clock osc adj.	Einstellung vom Chrominanz trägeruhroszillator	AC

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
		CONTROLS	REGLER	
R2606	RVR - M4 4 1 9 GE Z Z	47K ohm, Pot., Color level adj.	47 kOhm, Potentiometer, FarbpegelEinstellung	AB
R2619	RVR - M4 4 0 9 GE Z Z	1K ohm, Pot., 1H Gain adj.	1 kOhm, Potentiometer, 1H- VerstärkungEinstellung	AB
R2631	RVR - M4 4 1 9 GE Z Z	47K ohm, Pot., Burst cleaning	47 kOhm, Potentiometer, Burstreinigung	AB
R2702	RVR - M4 4 1 5 GE Z Z	10K ohm, Pot., Carry BAL (B-F)	10 kOhm, Potentiometer, Übertragungsausgleich (B-F)	AB
R2709	RVR - M4 4 1 9 GE Z Z	47K ohm, Pot., Carry BAL (R-Y)	47 kOhm, Potentiometer, Übertragungsausgleich (R-Y)	AB
R2710	RVR - M4 4 1 9 GE Z Z	47K ohm, Pot., Carry BAL (B-Y)	47 kOhm, Potentiometer, Übertragungsausgleich (B-Y)	AB
R2742	RVR - M4 4 1 9 GE Z Z	47K ohm, Pot., Burst cleaning P-in-P	47 kOhm, Potentiometer, Übertragungsausgleich, Bild-in-Bild	AB
		COILS	SPULEN	
DL2601	RCi L Z 0 2 5 5 GE Z Z	Chroma delay line	Chrominanzverzögerungsleitung	AK
FL2601	RCi L V 0 0 4 7 GE Z Z	Chroma band pass filter	Chrominanzbandpaßfilter	AE
FL2701	RCi L V 0 0 4 7 GE Z Z	Chroma band pass filter	Chrominanzbandpaßfilter	AE
FL2702	RCi L V 0 0 4 7 GE Z Z	Chroma band pass filter	Chrominanzbandpaßfilter	AE
L2601	RCi L Z 0 4 7 2 CE Z Z	Color separate	Farbtrennung	AD
L2604	VP - DF 1 0 1 K 0 0 0 0	100µH	100µH	AB
L2606	VP - XF 8 R 2 K 0 0 0 0	8.2µH	8,2µH	AB
L2701	VP - DF 1 0 1 K 0 0 0 0	100µH	100µH	AB
L2702	VP - DF 1 0 1 K 0 0 0 0	100µH	100µH	AB
		MISCELLANEOUS	SONSTIGE TEILE	
FL2602	RMP TD 0 2 5 4 GE Z Z	Package circuit	Pakeeschaltkreis	AG
X2601	RCRSB 0 0 0 8 CE Z Z	Crystal oscillator	Quarzoszillator	AP
X2701	RCRSB 0 0 0 8 CE Z Z	Crystal oscillator	Quarzoszillator	AP
PR2701	RMP TP 0 0 0 8 GE Z Z	Thermister	Thermistor	AD
BT2701	UBATN 0 0 0 6 GE Z Z	Battery	Batterie	AW
SC	QS 0 CN 2 1 9 5 GE Z Z	Socket (21 Pin)	Auschuß (21-polig)	AD
SD	QPL GN 1 2 7 8 GE Z Z	Plug (12 Pin)	Stecker (12-polig)	AC
SE	QPL GN 0 2 7 8 GE Z Z	Plug (2 Pin)	Stecker (2-polig)	AA
SI	QPL GN 0 2 7 8 GE Z Z	Plug (2 Pin)	Stecker (2-polig)	AA
SH	QPL GN 0 4 7 8 GE Z Z	Plug (4 Pin)	Stecker (4-polig)	AB
		PWB-X	PWB-X	
		TRANSISTORS	TRANSISTOREN	
Q301	VS 2 SC 2 0 5 9 KN 1 E	2SC2059K	2SC2059K	AC
Q302	VS 2 SC 1 6 2 3 L 5 1 E	2SC1623L	2SC1623L	AB
Q303	VSDTC 1 4 4 EK / - 1	DTC144EK	DTC144EK	AB
		INTEGRATED CIRCUIT	INTEGRIERTE SCHALTkreISE	
IC301	VHi BA 7 2 5 2 S / - 1			AH
		COILS	SPULEN	
L303	VP - DF 1 0 1 K 0 0 0 0	100µH	100µH	AB
L304	VP - XF 6 8 0 K 0 0 0 0	68µH	68µH	AB
L305	VP - XF 3 3 0 K 0 0 0 0	33µH	33µH	AB
L306	VP - XF 2 7 0 K 0 0 0 0	27µH	27µH	AB
L307	VP - XF 2 2 0 K 0 0 0 0	22µH	22µH	AB
L309	VP - XF 2 2 1 K 0 0 0 0	220µH	220µH	AB

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE CODE
		MISCELLANEOUS	SONSTIGE TEILE	
FB301	RBL N - 0013GEZZ	Balun	Störstromumspanner	AB
FB302	RBL N - 0013GEZZ	Balun	Störstromumspanner	AB
XA	QPLGN0780GEZZ	Plug (7 Pin)	Stecker (7-polig)	AC
ZA	QSCN0596GEZZ	Socket (5 Pin)	Anschluß (5-polig)	AB
	QPLGN0229TAZZ	TP301-302	TP301-302	AB
		PWB-P	PWB-P	
		TRANSISTORS	TRANSISTOREN	
△ Q901	95KUAD0088AZ	2SD1565	2SD1565	AF
△ Q902	95KUA0069AZ	2SA1013	2SA1013	AE
△ Q903	95KUAB0049DZ	2SB703	2SB703	AG
△ Q904	95KUAD0088AZ	2SD1565	2SD1565	AF
Q905	95KUAC0004AZ	2SC945 (VC-D802G)	2SC945 (VC-D802G)	AC
		INTEGRATED CIRCUITS	INTEGRIERTE SCHALTKEIRE	
△ IC901	95KUCB0029AZ			AK
IC902	95KUCZ0097ZZ			AG
		DIODES	DIODEN	
△ D901	95KUBC0112AZ	(11E1)	(11E1)	AB
△ 904	95KUBC0112AZ	(11E1)	(11E1)	AB
D905	95KUBD0430AZ	(RD18ESB)	(RD18ESB)	AB
△ D906	95KUBC0110AZ	(S2V10)	(S2V10)	AD
△ 909	95KUBC0110AZ	(S2V10)	(S2V10)	AD
△ D910	95KUBC0125BZ	(ERA15-02)	(ERA15-02)	AB
D911	95KUBC0125BZ	(ERA15-02)	(ERA15-02)	AB
D912	95KUBD0135AZ	(RD33EB)	(RD33EB)	AC
△ D913	95KUBC0125AZ	(ERA15-01)	(ERA15-01)	AB
△ 920	95KUBC0125AZ	(ERA15-01)	(ERA15-01)	AB
D921	95KUBD0442AZ	(RD8.2ESB) (VC-D802G)	(RD8,2ESB) (VC-D802G)	AB
D921	95KUBD0439AZ	(RD12ESB) (VC-D801S)	(RD12ESB) (VC-D801S)	AB
D922	95KUBD0429AZ	(RD5.6ESB)	(RD5,6ESB)	AB
D923	95KUBZ0025ZZ	(E-701) (VC-D802G)	(E-701) (VC-D802G)	AB
		CAPACITORS	KONDENSATOREN	
△ C901	95KUGFJ104BX	.1µF, 250V, Metalized polypro	.1µF. 250V, Metallisiertes Polypropylen	AH
△ C902	95KUGAE222EP	2200µF, 35V, Electrolytic	2200µF, 35V, elektrolytisch	AH
△ C904	95KUGAD222BU	2200µF, 25V, Electrolytic	2200µF, 25V, elektrolytisch	AG
△ C911	95KUGAC222BU	2200µF, 16V, Electrolytic	2200µF, 16V, elektrolytisch	AF
C912	95KUGAB221BU	220µFF, 10V, Electrolytic	220µF, 10V, elektrolytisch	AC
△ C914	95KUGAF1R0BU	1000µF, 35V, Electrolytic	1000µF, 35V, elektrolytisch	AB
		RESISTORS	WIDERSÄNDE	
△ R901	95KUEZ0085ZZ	12M ohm, 1/2W, Carbon	12M Ohm, 1/2W, Zementwiderstand	AE
△ R908	95KUZZ0083ZZ	8.2 ohm, 1/4W, Fusible	8,2 Ohm, 1/4W, Sicherung Widerstand	AL
△ R915	95KUEZ0189ZZ	.27 ohm, 1/4W, Fusible	2,7 Ohm, 1/4W, Sicherung Widerstand	AC
△ R919	95KUZZ0029ZZ	2.7 ohm, 1/4W, Fusible	.2 Ohm, 1/4W, Sicherung Widerstand	AE
△ R924	95KUEZ0248ZZ	.2 ohm, 1/4W, Fusible	.15 Ohm, 1/4W, Sicherung Widerstand	AC
△ R925	95KUEZ0226ZZ	.15 ohm, 1/4W, Fusible		AC

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
		FILTER AND TRANSFORMER	FILTER UND TRANSFORMATOR	
△ L901	95KUKZ0025ZZ	Line filter	Leitungsfiler	AM
△ L902	95KUKZ0067ZZ	Filter (VC-D802G)	Filter (VC-D802G)	AP
△ T1	95K116030381	Power transformer	Netztransformator	BA
		CONTROLS	REGLER	
VR901	95KUFBA502CB	5K ohm, Pot., All time 5V adj.	5 kOhm, Potentiometer, Ganzzeit-5V	AD
VR902	95KUFBA102CB	1K ohm, Pot., All time 12V adj. (VC-D802G)	1 kOhm, Potentiometer, Ganzzeit-12V	AC
		MISCELLANEOUS	SONSTIGE TEILE	
△ F901	95KPKC0308ZZ	Fuse, T1A, 250V	Sicherung, T1A, 250V	AE
△	QAC CZ2010GEZZ	AC cord (VC-D802G)	Netzkabel (VC-D802G)	AM
△	QAC CV2024GEZZ	AC cord (VC-D801S)	Netzkabel (VC-D801S)	AM
PA	95KPKZ0450ZZ	Plug (10 Pin)	Stecker (10-polig)	AD
PB	95KECB7228ZZ	Plug (3 Pin)	Stecker (3-polig)	AD
PC	95KPKZ0447ZZ	Plug (7 Pin) (VC-D802G)	Stecker (7-polig) (VC-D802G)	AD
PC	95KPKZ0446ZZ	Plug (6 Pin) (VC-D801S)	Stecker (6-polig) (VC-D801S)	AC
PD	95KPKZ0442ZZ	Plug (2 Pin) (VC-D802G)	Stecker (2-polig) (VC-D802G)	AB
AC	95KPKZ0431ZZ	Plug (2 Pin) (VC-D802G)	Stecker (2-polig) (VC-D802G)	AC
<p>VC-D801S(BK)</p> <p>* Remark: When changing main cord the whole cord with connection plug must be changed.</p> <p>* SWEDEN The cable is kept as a spare part by SHARP ELECTRONICS (SVENSKA) AB.</p> <p>* DENMARK The cable is kept as a spare part by EWETRONIC A/S.</p> <p>* FINLAND The cable is kept as a spare part by LOHJA CORPORATION ELECTRONICS DIVISION.</p> <p>* NORWAY The cable is kept as a spare part by TRANSEL A/S.</p> <p>* Bemerkung: Bei der Auswechslung des Netzkabels muß das ganze Kabel mit Stecker ausgewechselt werden.</p> <p>* SCHWEDEN SHARP ELECTRONICS (SVENSKA) AB hat das Kabel als Ersatzteil vorrätig.</p> <p>* DÄNEMARK EWETRONIC A/S hat das Kabel als Ersatzteil vorrätig.</p> <p>* FINNLAND LOHJA Corporation Electronics Division hat das Kabel als Ersatzteil vorrätig.</p> <p>* NORWEGEN KTRANSE A/S hat das Kabel als Ersatzteil vorrätig.</p>				
		F-SYN/VPS MODULE (VC-D802G(BK))	F-SYN/VPS-MODULBAUELEMENT	
		INTEGRATED CIRCUITS	INTEGRIERTE SCHALTKREISE	
IC1401	RH- i X0305GEZZ			AW
IC1402	VHi M58630P / - 1			AU
IC1403	VHi SDA5233 / - 1			AV
IC1404	VHi SDA5640 / - 1			AV
		DIODES	DIODEN	
D1401	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA
1404	RH- DX0142CEZZ	(1SS133)	(1SS133)	AA

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
		COILS	SPULEN	
L1401	VP-LK101K0000	100 μ H	100 μ H	AB
L1402	VP-LK100K0000	10 μ H	10 μ H	AB
		MISCELLANEOUS	SONSTIGE TEILE	
X1401	RCRSB0054GEZZ	Crystal oscillator	Quarzoszillator	AH
X1402	RCRSB0026CEZZ	Crystal oscillator	Quarzoszillator	AL
K1401	QPLGZ0525GEZZ	Plug (5 Pin)	Stecker (5-polig)	AB
K1402	QPLGZ0925GEZZ	Plug (9 Pin)	Stecker (9-polig)	AC
UA	QS0CN1594GEZZ	Socket (15 Pin)	Anschluß (15-polig)	AD
		SYSTEM CONTROL SUB CIRCUIT	SYSTEM STEUERUNGUNTER SCHALTUNG	
		TRANSISTORS	TRANSISTOREN	
Q8901	VSDTA124F / - 1	DTA124F	DTA124F	AC
Q8902	VSDTA124F / - 1	DTA124F	DTA124F	AC
		INTEGRATED CIRCUIT	INTEGRIERTE SCHALTKEIS	
IC8901	VHi TC4077BP-1			AD
		DIODE	DIODE	
D8901	RH-DX0142CEZZ	(1SS133)	(1SS133)	AA
		MISCELLANEOUS	SONSTIGE TEILE	
GA	QPLGN0620REZZ	Plug (6 Pin)	Stecker (6-polig)	AB
		DIGITAL CIRCUIT (A) SUB CIRCUIT	DIGITALUNTERSCHALTUNG (A)	
		INTEGRATED CIRCUITS	INTEGRIERTE SCHALTKEISE	
IC2901	VHi HD74LS04P /			AE
IC2902	VHi HD74LS00P /			AE
IC2903	VHi HD74LS74A /			AE
		DIODES	DIODEN	
D2901	VHD1SS119 / - 1	(1SS119)	(1SS119)	AB
D2902	VHD1SS119 / - 1	(1SS119)	(1SS119)	AB
		MISCELLANEOUS	SONSTIGE TEILE	
SM	QPLGN0920REZZ	Plug (9 Pin)	Stecker (9-polig)	AB
		REMOTE CONTROL TRANSMITTER CIRCUIT	FERNBEDIENUNGSENDERKREIS	
	RRMCG0323GES A	Remote control transmitter (VC-D802G(BK))	Fernbedienungsseender (VC-D802G(BK))	BH
	RRMCG0370GES A	Remote control transmitter (VC-D801S(BK))	Fernbedienungsseender (VC-D801S(BK))	BG
		TRANSISTOR	TRANSISTOR	
	VS2SC1623L6-1	2SC1623L6	2SC1623L6	AB
		BINTEGRATED CIRCUIT	INTEGRIERTE SCHALTKEIS	
	RH-iX5001EHZZ	M50930	M50930	AY

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
		DIODE AND CRYSTAL	DIODE UND QUARZ	
	VH D R L S - 73 / - 1 R H - P X 0 0 6 8 P A Z Z R C R S P 0 0 7 9 E H Z Z R C R S P 0 0 8 5 E H Z Z	RLS-73 LED (GL521) Crystal (32.768KHz) Crystal (1.216MHz)	RLS-73 Leuchtdiode (GL521) Quarz (32,768kHz) Quarz (1,216MHz)	AB AD AE AT
		MISCELLANEOUS	SONSTIGE TEILE	
	Q C N T M 5 0 6 5 E H Z Z Q C N T M 5 0 6 6 E H Z Z Q C N T M 5 0 6 7 E H Z Z	Battery terminal (+) Battery terminal (-) Battery terminal (+, -)	Batterieklemme (+) Batterieklemme (-) Batterieklemme (+, -)	AG AG AG
		CABINET PARTS	GEHÄUSETEILE	
	L H L D Z 5 2 4 8 E H Z Z L H L D Z 5 2 6 0 E N Z Z L H L D Z 5 2 5 0 E H Z Z L H L D Z 5 2 0 1 E H Z Z J B T N K 5 1 7 8 E H Z Z J B T N K 5 1 7 2 E H Z Z L H L D Z 5 1 5 3 E H Z Z Q C N C G 5 1 2 6 E H Z Z Q C N C G 5 1 3 5 E H Z Z P C U S S 5 0 6 9 E H Z Z X J B S F 2 3 P 0 6 0 0 0 X J P S D 1 4 P 0 6 0 0 0	Cabinet, Top (VC-D802G) Cabinet, Top (VC-D801S) Cabinet, Bottom Battery cover Rubber key (VC-D802G) Rubber key (VC-D801S) Infrared filter Connector Connector Cushion Screw Screw	Gehäusehälfteineinheit, Obere (VC-D802G) Gehäusehälfteineinheit, Obere (VC-D801S) Gehäusehälfteineinheit, Boden Batteriefachdeckel Gummitaste (VC-D802G) Gummitaste (VC-D801S) Infrarotfilter Leitungswähler Leitungswähler Kissen Schraube Schraube	AM AE AC AL AG AC AD AA AA AA
		THE OTHER PARTS	SONSTIGE TEILE	
	T G A N - 3 0 6 9 G E Z Z T i N S - 1 0 2 3 G E Z Z T i N S - 1 0 2 4 G E Z Z R R M C G 0 3 2 3 G E S A R R M C G 0 3 7 0 G E S A R C N V R 0 0 1 4 G E Z Z	Guarantee Card (VC-D802G) Operation manual (VC-D802G) Operation manual (VC-D801S) Remote control transmitter (VC-D802G) Remote control transmitter (VC-D801S) RF converter	Garantie karte (VC-D802G) Bedienungsanleitung (VC-D802G) Bedienungsanleitung (VC-D801S) Fernbedienungssender (VC-D802G) Fernbedienungssender (VC-D801S) HF-Wandler	AC AM AM BH BG BA
		MECHANISM CHASSIS PARTS	TEILE DES LANFWERKCHASSIS	
1	R H - P X 0 0 9 0 G E 0 1 D D R M U 0 0 0 2 H E 1 7	LED sensor Upper drum ass'y	Leuchtdiodensensor Obere Trommeleinheit	AH BH
4	P G i D C 0 0 3 5 G E F W	V base	V-Unterteil	AM
5	L A N G F 9 2 6 4 G E Z Z	Pinch roller link plate ass'y	Andruckrollen-Relaisplatteneinheit	AK
6	D D R M L 0 0 0 8 H E 0 4	Lower drum ass'y	Untere Trommeleinheit	BD
7	L A N G F 9 3 2 9 G E Z Z	Mechanism control unit angle	Halterung der mechanischen Steuereinheit	AG
11	P B R K Z 0 0 0 3 G E Z Z	Tension band ass'y	Spannbandeinheit	AD
12	-	Main chassis	Hauptchassis	-
13	L C H S S 0 0 1 1 G E Z Z	Guide plate ass'y	Führungsplatteneinheit	AG
14	L D A i H 3 0 1 5 G E Z Z	Audio/Control head plate	Ton-/Steuerkopfplatte	AF
15	L H L D Z 1 4 3 5 G E Z Z	Loading motor holder	Lademotorhalter	AC
17	L H L D P 1 0 4 5 G E Z Z	Cassette LED holder	Cassetten-Leuchtdiodenfassung	AE
18	L P 0 L M 0 0 2 2 G E Z Z	Pole base A ass'y	Stabunterteil-A-Einheit	AM
19	L P 0 L M 0 0 2 3 G E Z Z	Pole base B ass'y	Stabunterteil-B-Einheit	AM
20	M A R M M 0 0 5 2 G E Z Z	Loading arm A ass'y	Ladearm-A-Einheit	AE
21	M A R M M 0 0 5 3 G E Z Z	Loading arm B ass'y	Ladearm-B-Einheit	AE
22	M A R M M 0 0 5 4 G E Z Z	Tension arm ass'y	Spannarmeinheit	AE
23	M A R M P 0 0 3 5 G E Z Z	Full erase head arm	Vollöschkopfarm	AB
24	M L E V F 0 2 2 9 G E Z Z	Pinch roller lever ass'y	Andruckrollenhebeleinheit	AH
25	M L E V F 0 2 2 5 G E Z Z	Brake drive lever ass'y	Bremsantriebshebeleinheit	AF
27	M L E V P 0 0 8 3 G E Z Z	Auxiliary brake lever	Hilfsbremshebel	AA
28	M L E V P 0 0 8 4 G E Z Z	Torque change lever	Drehmomentumschalthebel	AA
29	M L E V P 0 0 8 5 G E Z Z	Take-up brake lever	Aufwickelbremshebel	AC
30	M L E V P 0 0 8 6 G E Z Z	Supply brake lever	Abwickelbremshebel	AC
31	M L E V P 0 0 8 7 G E Z Z	Tension adjusting lever	Spanneinstellhebel	AC

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
32	MLEVP0123GEZZ	Tension release lever	Spannfriegabehebel	AB
33	MSLiF0023GEZZ	Shifter ass'y (A)	Gleitstückeinheit (A)	AE
34	MSLiF0024GEZZ	Shifter ass'y (B)	Gleitstückeinheit (B)	AD
35	MSPRC0006GEFJ	Audio/Control heads spring	Ton-/Steuerkopffeder	AA
37	MSPRC0084GEFJ	Audio/Control heads arm spring	Ton-/Steuerkopfarmfeder	AA
39	MSPRC0086GEFJ	Brake lock spring	Bremssperrfeder	AA
40	MSPRT0216GEFJ	Pinch pressure spring	Andruck-Druckfeder	AB
41	MSPRT0217GEFJ	Full erase head arm spring	Vollöschkopfarmfeder	AA
42	MSPRT0218GEFJ	Tension arm spring	Spannarmfeder	AA
43	MSPRT0241GEFJ	Auxiliary brake spring	Hilfsbremsfeder	AA
44	MSPRT0220GEFJ	Loading gear reciprocating spring	Ladezahnrad-Pendelfeder	AA
45	MSPRT0221GEFJ	Main brake spring	Hauptbremsfeder	AA
48	NBLTK0039GE00	Loading belt	Laderiemen	AB
51	NDAiV1032GEZZ	Supply reel disk ass'y	Abwickelspulenscheibeneinheit	AF
52	NDAiV1038GEZZ	Take-up reel disk ass'y	Aufwickelspulenscheibeneinheit	AF
54	NGERH1092GEZZ	Half load cam	Halbladungsnocken	AD
55	NGERH1109GEZZ	Brake cam	Bremsnocken	AC
56	NGERH1108GEZZ	Master cam	Hauptnocken	AC
57	NGERH1075GEZZ	Loading gear (A) ass'y	Ladezahnrad-(A)-Einheit	AD
58	NGERH1076GEZZ	Loading gear (B) ass'y	Ladezahnrad-(B)-Einheit	AC
59	NGERH3032GEZZ	Segment gear ass'y	Segmentradeinheit	AE
60	NR0LM0016GEFW	Segment gear roller	Segmentred rolle	AA
61	NPLYV0036GEZZ	Loading motor pulley	Lademotor-Riemenscheibe	AB
63	NPLYV0118GEZZ	Loading block ass'y	Ladeblockeinheit	AK
64	NPLYV0111GEZZ	Reel drive unit	Spulenantriebseinheit	AR
65	NR0LP0046GEZZ	Supply impedance roller	Widerstandsrolle für Abwicklung	AH
66	NR0LP0047GEZZ	Guide roller ass'y	Führungsrolleneinheit	AH
67	NR0LR0013GEZZ	Pinch roller ass'y	Andruckrolleneinheit	AN
68	PGiDP0018GEFW	Supply impedance sub shaft	Abwickelwiderstandshilfsachse	AB
69	NSFTZ0026GEFD	Brake lock shaft	Bremssperrachse	AA
73	PGiDP0016GEFW	Retaining guide	Halteführung	AE
75	PGiDH0029GEZZ	Supply impedance flange	Widerstandsflansch für Abwicklung	AB
78	QBRSK0017GEZZ	Earth brush ass'y	Massebürsteneinheit	AD
80	QPLGN0229TAZZ	Plug, 2 pin (Reel sensor PWB)	Stecker, 2-polig (Spulensensorleiterplatte)	AB
82	QPLGN0278GEZZ	Plug, 2 pin (Mechanism relay PWB)	Stecker, 2-polig (Laufwerkrelaisleiterplatte)	AA
83	QPLGN0280GEZZ	Plug, 2 pin (Loading motor PWB)	Stecker, 2-polig (Lademotorleiterplatte)	AB
84	QPLGN0880GEZZ	Plug, 8 pin	Stecker, 8-polig	AC
88	QPWBF2576GEZZ	Reel sensor PWB	Spulensensorleiterplatte	AE
89	QPWBF2583GEZZ	Loading motor PWB	Lademotorleiterplatte	AA
90	QPWBF2582GEZZ	Full erase head PWB	Vollöschkopfleiterplatte	AA
91	QSW-F0024GEZZ	Shafter switch (Reel sensor PWB)	Gleitstückschalter (Spulensensorleiterplatte)	AD
92	QSW-R0019GEZZ	Cam switch	Nockenschalter	AM
95	RH-PX0099GEZZ	Cassette LED	Cassetten-Leuchtdiode	AG
96	RHEDT0019GEZZ	Full erase head ass'y	Vollöschkopfeinheit	AP
97	RHEDU0058GEZZ	Audio/Control heads ass'y	Ton-/Steuerkopfeinheit	AT
98	VHiM5F7805L-1	Transistor	Transistor	AE
99	RM0TM1042GEZZ	Loading motor	Lademotor	AM
100	RM0TP1084GEZZ	D motor ass'y	Direktantriebsmotoreinheit	BB
101	RM0TN2010GEZZ	Capstan DD Motor	Antriebsachsen-Direktantriebs-motor	BC
102	RPLU-0075GEZZ	Brake solenoid	Bremsmagnetspule	AG
104	VCKYAT1HD102M	1000pF, 20%, 50V (C8001,8002) (Reel sensor PWB)	1000pF, 20%, 50V (C8001, 8002) (Spulensensorleiterplatte)	AA
105	VRD-RA2EE473J	47K ohm, 5%, 1/4W, Carbon (R8002,8004) (Reel sensor PWB)	47 kOhm, 5%, 1/4W, Kohlewiderstand (R8002,8004) (Spulensensorleiterplatte)	AA
106	VRD-RA2EE222J	2.2K ohm, 5%, 1/4W, Carbon (R8007) (Reel sensor PWB)	2,2 kOhm, 5%, 1/4W, Kohlewiderstand (R8007) (Spulensensorleiterplatte)	AA
107	VRD-RA2EE221J	220 ohm, 5%, 1/4W, Carbon (R8001,8003) (Reel sensor PWB)	220 Ohm, 5%, 1/4W, Kohlewiderstand (R8001, 8003) (Spulensensorleiterplatte)	AA
108	LX-NZ3019GEZZ	Adjusting nut	Einstellmutter	AB
109	MLEVC0020GEZZ	Reverse guide lever	Rücklaufführungshebel	AG
110	MSPRC0088GEFJ	Reverse guide spring	Rücklaufführungsheber	AA
112	MLEVP0101GEZZ	Universal brake lever	Universal-Bremsheble	AB
114	MSPRT0240GEFJ	Universal brake spring	Universal-Bremsfeder	AA
115	PSPAB0022GEFW	Supply impedance roller spacer	Anschlußimpedanz-Rollendistanzstück	AB
116	VRD-RA2EE122J	1.2K ohm, 5%, 1/4W, Carbon (R8008)	1,2 kOhm, 5%, 1/4W, Kohlewiderstand (R8008)	AA
117	VRD-RA2EE152J	1.5K ohm, 5%, 1/4W, Carbon (R8009)	1,5 kOhm, 5%, 1/4W, Kohlewiderstand (R8009)	AA
118	QS0CN0712REZZ	Socket, 7 pin (NA) (Reel sensor PWB)	Anschluß, 7-polig (NA)(Spulensensorleiterplatte)	AC

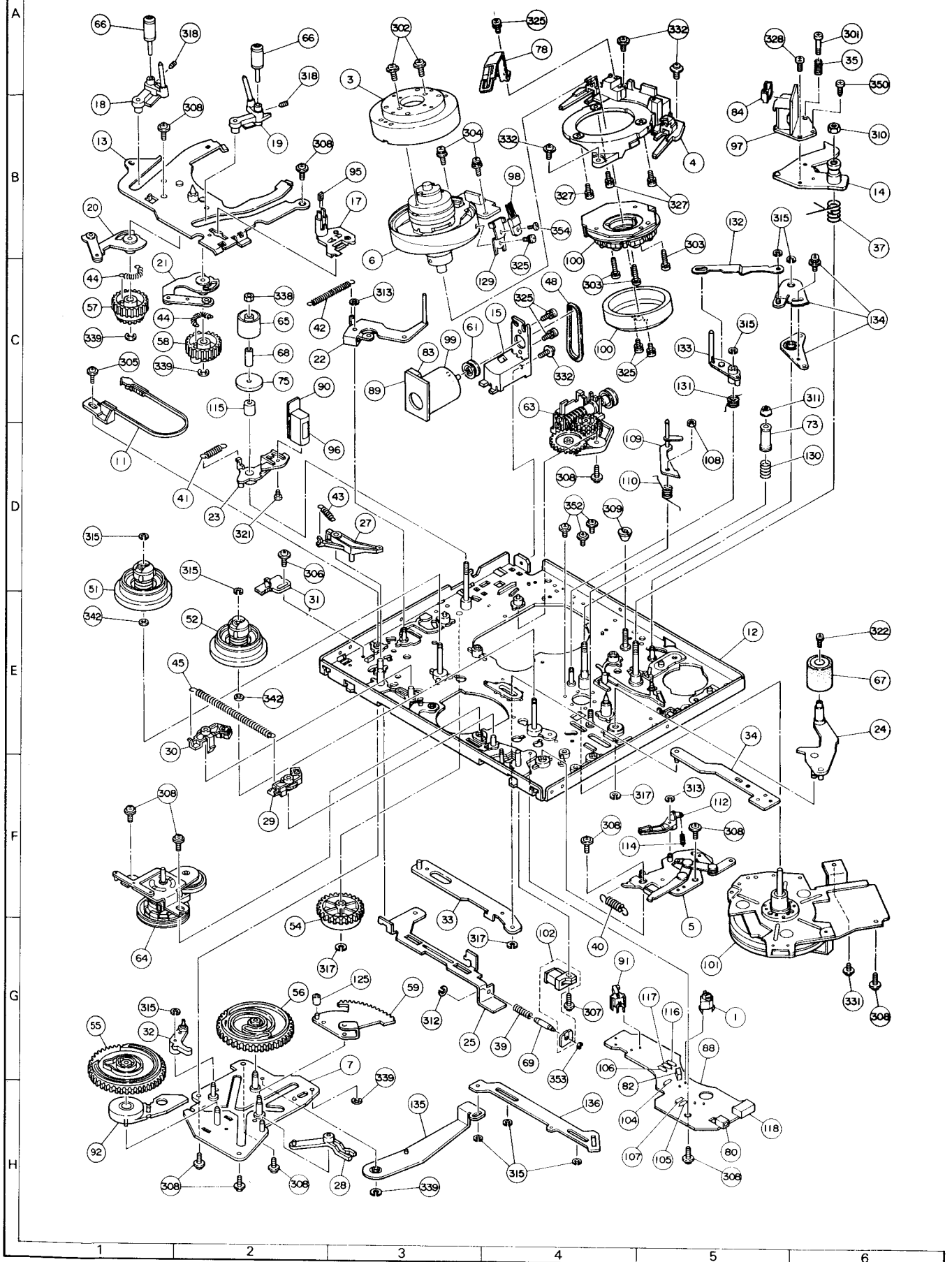
REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
120	RPL U - 0080GEZZ	DD brake solenoid	Direktantrieb-Bremsmagnet	AK
121	ML E V P 0102GEZZ	DD brake lever	Direktantrieb-Bremshebel	AB
122	LANGF9290GEFJ	DD brake fixing angle	Direktantrieb-Bremshalterung	AD
123	MSPRC0116GEFJ	Spring, for release	Feder, für Freigabe	AA
124	MSPRT0239GEFJ	Spring, for DD brake lever	Feder, für Direktantrieb-Bremshebel	AA
128	PSPAB0019GEFW	Spacer, for DD solenoid	Feder, für Direktantrieb-Magnet	AC
129	LANGT9105GEFW	Heater bracket	Heizelement-Halter	AC
130	MSPRC0085GEFJ	Retaining guide adjusting spring	Halteführungseinstellfeder	AA
131	MSPRD0078GEFJ	Half load lever spring	Halbladungshebelfeder	AB
132	LANGJ0021GEFW	Connection lever	Verbindungshebel	AD
133	ML E V C 0018GEZZ	Half load lever ass'y	Halbladungshebeleinheit	AL
134	ML E V F 0263GEZZ	Center lever ass'y	Verbindungshebeleinheit	AL
135	ML E V F 0262GEZZ	Cam lever ass'y	Nockenhebeleinheit	AH
136	MSLi F 0030GEZZ	Half load shifter	Halbladungsverschieber	AE
<div>CASSETTE HOUSING CONTROL PARTS</div> <div>ASSETTENGEGÄUß-REGELTEILE</div>				
	CHL DX 3043GE00	Cassette housing ass'y (Note that ref. No.1 "Cassette cover" is not shipped together.)	Cassettengehäusseinheit (Beachten Sie, daß Ref. Nr.1 "Cassetteneinheitsdeckel" nicht zusammen versendet wird.)	BC
1	HDE C Q 0477GES A	Cassette cover	Cassetteneinheitsdeckel	AH
2	LANGF9323GEFW	Top plate	Obere Platte	AG
3	LANGF9305GEZZ	Motor angle ass'y	Motorwinkeleinheit	AC
4	LHL DX 1007GE00	Frame (Right)	Rahmen (rechts)	AG
5	LHL DX 1006GE00	Frame (Left)	Rahmen (links)	AH
6	LHL DX 3037GEZZ	Slider ass'y	Gleitstückeinheit	AQ
7	MAR MM 0051GEFW	Drive washer	Antriebsunterlagscheibe	AB
8	MAR MP 0029GEZZ	Drive arm (Right)	Antriebsarm (rechts)	AB
9	MAR MP 0030GEZZ	Drive arm (Left)	Antriebsarm (links)	AB
10	MAR MP 0031GEZZ	Cassette cover arm	Cassetteneinheitsdeckelarm	AA
11	ML E V P 0080GEZZ	Timing lever	Zeitsteuerungshebel	AA
12	ML E V P 0081GEZZ	Cover open lever	Hebel für Öffnung des Fachdeckels	AB
13	MSPRD0065GEFJ	Drive reciprocating spring	Antriebs-Pendelfeder	AA
14	MSPRD0066GEFJ	Cover open lever spring	Hebelfeder für Öffnung	AA
15	MSPRT0215GEFJ	Drive spring	Antriebsfeder	AA
16	NGERH1093GEZZ	Drive gear (Right)	Antriebszahnrad (rechts)	AB
17	NGERH1070GEZZ	Drive gear (Left)	Antriebszahnrad (links)	AB
18	NGERH1071GEZZ	Phase gear	Phasenzahnrad	AA
19	NGERW1018GEZZ	Worm gear	Schneckenantrieb	AB
20	NGERW1026GEZZ	Worm wheel gear	Schneckenradantrieb	AC
21	NPLYV0100GEZZ	Motor pulley	Motorriemenscheibe	AA
22	NSFTL0442GEFD	Main shaft	Hauptachse	AD
23	PGi DM0042GE00	Down guide	Abwärtsführung	AF
24	PGUMM0028GEZZ	Worm-anti-vibration	Dämpfungsgummi für Schnecke	AB
26	QPL GN0980GEZZ	Socket, (9 pin)	Büchse (9-polig)	AC
27	QPWBF2298GEZZ	Relay PWB	Relaisleiterplatte	AC
28	QPWBF1553GEZZ	End sensor PWB	Endsensorleiterplatte	AB
29	QSW- F 0032GEZZ	Cassette switch	Cassettenschalter	AD
30	QSW- F 0022GEZZ	Mode switch	Betriebsartenschalter	AE
31	QSW- F 0023GEZZ	Cassette erase protection switch	Löschschutzschalter	AD
33	RH- P X 0053GEZZ	Photo-transistor	Optoelektronischer-Transistor	AF
34	RMOTM1040GEZZ	Cassette motor	Cassettenmotor	AN
35	MSPRD0068GEFJ	Cassette cover spring	Cassetteneinheitsdeckelfeder	AA
36	VRD- RA2EE153J	Resistor (15K ohm)	Widerstand (15 kOhm)	AA
37	VS2SA937- Q/ - 1	Transistor	Transistor	AC
38	VRD- RA2BE392J	Resistor (3.9K ohm)	Widerstand (3,9 kOhm)	AA
39	VRD- RA2EE223J	Resistor (22K ohm)	Widerstand (22 kOhm)	AA
40	VRD- RA2BE222J	Resistor (2.2K ohm)	Widerstand (2,2 kOhm)	AA
41	VCTYP A1EX473M	Capacitor (0.047µF)	Kondensator (0,047 F)	AA
42	LX- WZ 1020GE00	Washer	Unterlagscheibe	AA
43	LX- WZ 1025GE00	Washer	Unterlagscheibe	AA
51	ML E V F 0264GEFW	Cassette lever	Cassettenhebel	AE
52	LX- WZ 1024GE00	Washer	Unterlagscheibe	AA
53	MSPRT0251GEFJ	Cassette lever spring	Cassettenhebelfeder	AA
54	ML E V P 0105GEZZ	Cassette chip	Cassettenplättchen	AA

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
		SCREWS, NUTS, WASHERS AND WIRE CLAMP	SCHRAUBEN, MUTTERN, UNTERLAG- SCHEIBEN UND LEITUNGSSCHALTER	
301	L X - B Z 3 0 1 8 G E Z Z	Audio/Control head screw	Ton-/Steuerkopf-schraube	AA
302	L X - B Z 3 0 3 9 G E F N	Screw W3P+9S-Ni	Schraube W3P+9S-Ni	AA
303	X B P S D 2 6 P 1 4 J 0 0	Screw 2.6P-14S	Schraube SW2,6P+14S	AA
304	L X - B Z 3 0 4 9 G E F D	Screw WSW3P+10S	Schraube WSW3P+10S	AA
305	L X - H Z 3 0 0 2 G E F D	Screw 3×8	Schraube 3×8	AA
306	L X - H Z 3 0 0 8 G E F D	Screw S3P+8S-W	Schraube S3P+8S-W	AA
307	L X - H Z 3 0 2 6 G E F D	Screw 2×8	Schraube 2×8	AA
308	L X - H Z 3 0 2 7 G E F D	Screw 3×8	Schraube 3×8	AA
309	L X - N Z 3 0 1 3 G E F W	Adjusting nut	Mutter	AA
310	L X - N Z 3 0 3 1 G E F W	Adjusting nut	Mutter	AA
311	L X - N Z 3 0 1 6 G E F D	Adjusting nut	Mutter	AA
312	L X - W Z 1 0 0 1 G E 0 0	Washer 3.2W-8-0.5	Unterlagscheibe 3,2W-8-0,5	AB
313	L X - W Z 1 0 0 3 G E 0 0	Washer 2.1W-5-0.5	Unterlagscheibe 2,1W-5-0,5	AA
315	L X - W Z 1 0 0 6 G E 0 0	Washer 2.6W-5.4-0.5	Unterlagscheibe 2,6W-5,4-0,5	AA
317	L X - W Z 1 0 1 5 G E 0 0	Washer 3.6W-7.2-0.5	Unterlagscheibe 3.6W-7,2-0,5	AA
318	L X - X Z 3 0 0 1 G E F P	Fixing screw M2×3	Befestigungsschraube M2×3	AC
321	X B P S D 2 0 P 0 3 0 0	Screw 2P+3S	Schraube 2P+3S	AA
322	X B P S D 2 6 P 0 4 J 0 0	Screw SW2.6P+4S	Schraube SW2,6P+4S	AA
323	X B P S D 3 0 P 0 4 J 0 0	Screw SW3P+4S	Schraube SW3P+4S	AA
325	X B P S D 3 0 P 0 5 J 0 0	Screw SW3P+5S	Schraube SW3P+5S	AA
327	X B P S D 3 0 P 0 8 J 0 0	Screw SW3P+8S	Schraube SW3P+8S	AA
328	X B P S D 3 0 P 0 8 0 0 0	Screw 3P+8S	Schraube 3P+8S	AA
331	X H P S D 3 0 P 0 6 W S 0	Screw C3P+6S	Schraube C3P+6S	AA
332	X H P S D 3 0 P 0 8 W S 0	Screw C3P+8S	Schraube C3P+8S	AA
334	X H P S 3 3 0 P 0 6 W S 0	Screw C3P+6S (Red)	Schraube C3P+6S (Rot)	AA
337	X J P S D 3 0 P 0 6 W S 0	Screw C3P+6S	Schraube C3P+6S	AA
338	L X - N Z 3 0 3 3 G E F D	Nut	Mutter	AA
339	X R E S J 3 0 - 0 6 0 0 0	E-ring E-3	E-Ring E-3	AA
342	X W H J Z 3 1 - 0 5 0 5 4	Washer 3.1W-5.4-0.5	Unterlagscheibe 3,1W-5,4-0,5	AA
342	X W H J Z 3 1 - 0 1 0 5 4	Washer 3.1W-5.4-0.13	Unterlagscheibe 3,1W-5,4-0,13	AA
342	L X - W Z 1 0 1 7 G E 0 0	Washer 3.1W-5.4-0.2	Unterlagscheibe 3,1W-5,4-0,2	AA
342	L X - W Z 1 0 1 8 G E 0 0	Washer 3.1W-5.4-0.3	Unterlagscheibe 3,1W-5,4-0,3	AA
342	L X - W Z 1 0 1 9 G E 0 0	Washer 3.1W-5.4-0.4	Unterlagscheibe 3,1W-5,4-0,4	AA
350	L X - B Z 3 0 6 5 G E F D	Screw	Schraube	AA
352	L X - H Z 3 0 3 6 G E F D	Screw C2.6P+5.5S	Schraube C2,6P+5,5S	AA
353	X R E S J 1 2 P 0 3 0 0 0	E-ring E1.2-T0.3	E-Ring E1,2-T0,3	AA
354	X B P S D 3 0 P 0 6 J 0 0	Screw SW3P+6S	Schraube SW3P+6S	AA
		FRONT PARTS (VC-D801S(BK))	FRONTTEILE (VC-D802G (BK))	
1	C P N L C 1 5 0 2 G E 1 1	Front panel ass'y	Frontplatteneinheit	BH
1-2	G C 5 V A 1 4 5 4 G E S A	Cover	Deckel	AC
1-3	G M A D i 0 1 6 1 G E S A	Window	Fenster	AC
1-6	H D E C E 0 1 3 1 G E S C	Decoration plate	Zierplatte	AK
1-7	H D E C E 0 1 4 1 G E S A	Decoration plate	Zierplatte	AG
1-8	H D E C E 0 1 4 4 G E S A	Decoration plate	Zierplatte	AQ
1-9	J B T N - 2 1 6 0 G E S A	Button, Play, Rec	Taste, Wiedergabe, Aufzeichnungs	AE
1-10	J B T N - 2 1 6 1 G E S A	Button, FF, Rew, Still	Taste, Schnellvorlauf, Rückspulung, Standbild	AE
1-11	J B T N - 2 1 7 1 G E S A	Button, Timer	Taste, Zeitschaltuhr	AD
1-12	J B T N - 2 1 9 4 G E S A	Button, Select	Taste, Auswahl	AD
1-13	J B T N - 2 1 6 4 G E S A	Button, Tuning	Taste, Einstellung	AD
1-14	G D 5 R F 1 4 0 9 G E S A	Door	Schild	AW
1-15	Q E A R P 0 2 3 7 G E F W	Earth plate	Masseplatte	AB
1-16	Q E A R P 0 2 3 8 G E F W	Earth plate	Masseplatte	AC
1-17	Q E A R P 0 2 4 0 G E F W	Earth plate	Masseplatte	AA
1-18	Q E A R P 0 2 3 6 G E F W	Earth plate	Masseplatte	AC
1-19	Q E A R P 0 2 4 1 G E Z Z	Earth plate	Masseplatte	AA
1-20	H i N D P 1 3 9 7 G E S A	Indication plate	Anzeigeplatte	AF
1-21	H i N D P 1 3 9 8 G E S A	Indication plate	Anzeigeplatte	AG
1-22	H B D G B 3 0 0 7 G E S B	Badge SHARP	Schild "SHARP"	AC
1-23	J B T N - 2 1 6 5 G E S A	Button, channel	Taste, Kanal	AD
1-24	J B T N - 2 1 3 5 G E S A	Button, power	Taste, Netz	AC

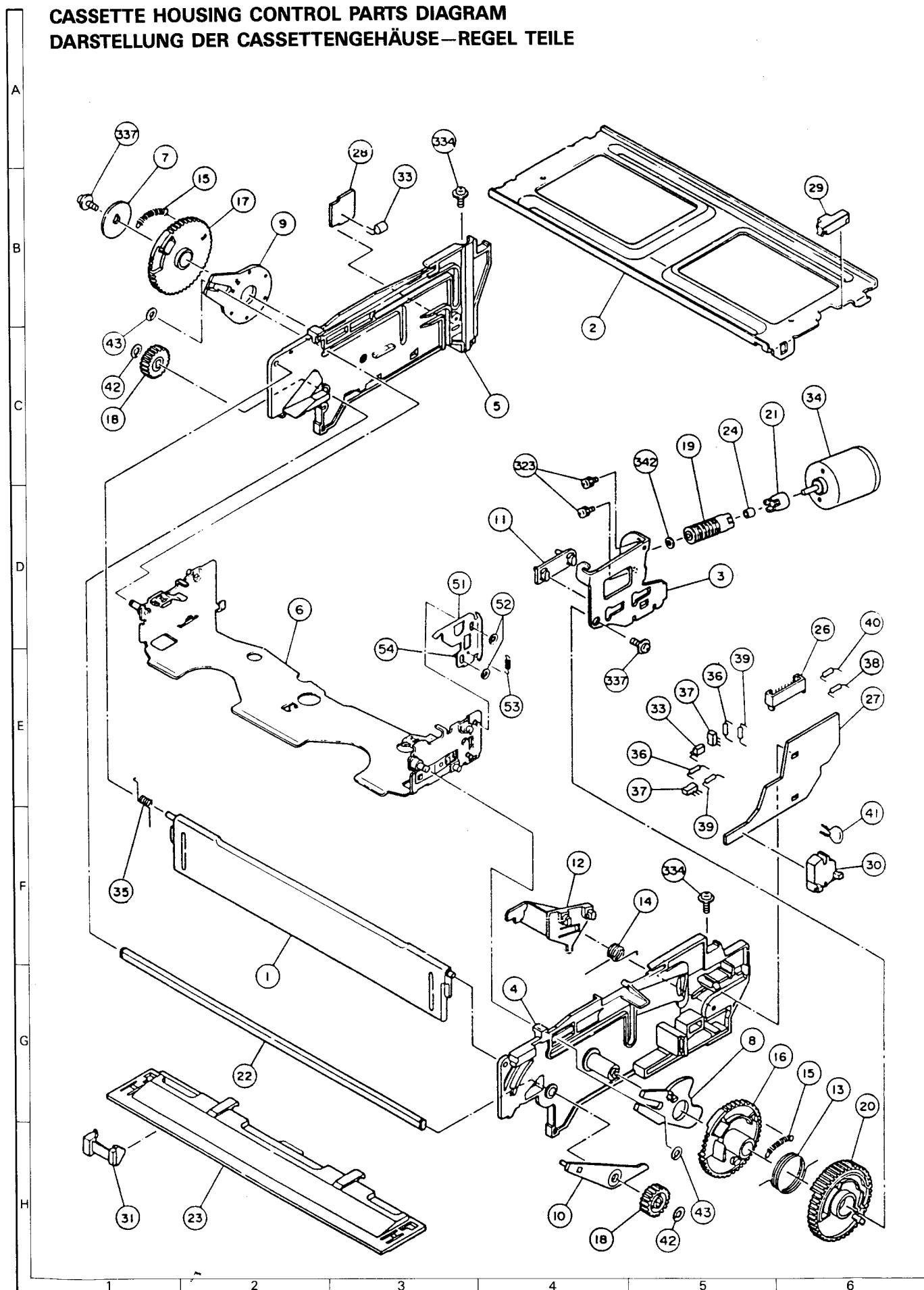
REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
1-25	GC 5VA1442GES A	Cover	Deckel	AC
1-26	JBTN- 2136GES A	Button, Eject	Taste, Auswurf	AC
1-29	LANGA0046GE ZZ	Magnet angle	Magnetwinkel	AC
1-30	LHLDZ3035GE ZZ	Holder	Halter	AD
1-31	MSPRC0134GE FJ	Spring	Feder	AA
1-32	TLABH0363GE ZZ	Timer operation instruction label	Zetiel der Bedienungsanleitung der Zeitschaltuhr	AC
1-33	HDECQ0485GES A	Decoration plate	Zierplatte	AG
1-34	PSPAV0108GE ZZ	Spacer	Abstandshalter	AA
FRONT PARTS (VC-D802G(BK)) FRONTTEILE (VC-D802G(BK))				
1	CPNLC1494GE 11	Front panel ass'y	Frontplatteneinheit	BH
1-2	GC 5VA1454GES A	Cover	Deckel	AC
1-3	GMADI 0161GES A	Window	Fenster	AC
1-6	HDECE0131GES C	Decoration plate	Zierplatte	AK
1-7	HDECE0141GES A	Decoration plate	Zierplatte	AG
1-8	HDECE0142GES A	Decoration plate	Zierplatte	AK
1-9	JBTN- 2160GES A	Button, Play, Stop, Rec	Taste, Wiedergabe, Stopp, Aufzeichnungen	AE
1-10	JBTN- 2161GES A	Button, FF, Rew, Still	Taste, Schnellvorlauf, Rückspulung, Standbild	AE
1-11	JBTN- 2200GES A	Button, Timer	Taste, Zeitschaltuhr	AD
1-12	GD 5RF1409GES A	Door	Schild	AW
1-13	QEARP0237GE FW	Earth plate	Masseplatte	AB
1-14	QEARP0238GE FW	Earth plate	Masseplatte	AC
1-15	QEARP0240GE FW	Earth plate	Masseplatte	AA
1-16	QEARP0236GE FW	Earth plate	Masseplatte	AC
1-17	QEARP0241GE ZZ	Earth plate	Masseplatte	AA
1-18	Hi NDP1395GES A	Indication plate	Anzeigeplatte	AG
1-19	Hi NDP1396GES A	Indication plate	Anzeigeplatte	AG
1-20	HBDGB3007GES B	Badge SHARP	Schild "SHARP"	AC
1-21	JBTN- 2165GES A	Button, channel	Taste, Kanal	AD
1-22	JBTN- 2135GES A	Button, power	Taste, Netz	AC
1-23	GC 5VA1442GES A	Cover	Deckel	AC
1-24	JBTN- 2136GES A	Button, Eject	Taste, Auswurf	AC
1-27	LANGA0046GE ZZ	Magnet angle	Magnetwinkel	AC
1-28	LHLDZ3035GE ZZ	Holder	Halter	AD
1-29	MSPRC0134GE FJ	Spring	Feder	AA
1-30	HDECQ0485GES A	Decoration plate	Zierplatte	AG
1-31	PSPAH0040GE ZZ	Spacer	Abstandshalter	AA
MECHANICAL PARTS (VC-D801S(BK)) MECHANISCHE TEILE (VC-D801S(BK))				
1	GCABA3031GES S	Upper cabinet	Obere Gehäuse	AR
2	GCABB1066GE ZZ	Bottom cabinet	Untere Gehäuse	AU
3	GC 5VA1438GE ZZ	Antenna terminal plate	Antennenklemm-Platte	AF
4	GBDYU3047GE ZZ	Bottom plate	Untere Platte	AH
5	LHLDZ1548GE ZZ	Display holder	Enzeighalter	AC
7	LANGK0106GE FW	Angle	Winhelstüte	AB
8	XHP SD30P06WS 0	Screw	Schraube	AA
10	LANGF7046GE FW	Angle for Main PWB	Winkelstüte, Hauptleiterplatte	AD
11	LX- LZ1001GE ZZ	Rivet	Niete	AA
12	XEBSD30P12000	Screw	Schraube	AA
14	XJBSF30P14000	Screw	Schraube	AA
15	LX- HZ3030GE FF	Screw	Schraube	AA
16	LX- HZ3040GE FF	Screw	Schraube	AA
17	TLABM1466GE ZZ	Model label	Modellschild	AB
18	PZETV0265GE ZZ	Insulator	Isolator	AG
20	LANGK0104GE FW	Earth plate	Masseplatte	AB
21	LANGK0105GE FW	Plate	Platte	AC
23	XEBSD40P16000	Screw	Schraube	AA
24	LANGF7045GE FW	Angle	Winkelstüte	AD
25	LHLD F1072GE 00	Holder	Halter	AB
26	PSLDM4168GE FW	Shield	Abschirmer	AE
27	PSLDM4169GE FW	Shield	Abschirmen	AE
28	PSLDM4167GE FW	Shield case	Abschirmkasten	AP
29	LHLD F1033GE ZZ	Holder	Halter	AA
30	LHLDW1021GE 00	Holder	Halter	AB

REF. NO. REF. NR.	PART NO. TEILE NR.	DESCRIPTION	BESCHREIBUNG	CODE KODE
MECHANICAL PARTS (VC-D802G(BK)) MECHANISCHE TEILE (VC-D802G(BK))				
1	CCABA3031GE02	Upper cabinet ass'y	Oberte Gehäusehälfteinheit	AU
1-1	GCABA3031GES1	Upper cabinet	Obere Gehäuse	AR
1-2	PSPAZ0123GEZZ	Spacer	Abstandshalter	AA
1-3	PSPAZ0132GEZZ	Sheet	Blatt	AE
2	GCABB1064GEZZ	Main frame	Hauptrahmen	AU
3	GC0VA1438GEZZ	Antenna terminal plate	Antennenklemm-Platte	AF
4	GBDYU3047GEZZ	Bottom plate	Untere Platte	AH
5	LHLDZ1548GEZZ	Display holder	Enzeighalter	AC
6	LHLDZ1542GEZZ	Y/C holder	Y/C-Halter	AB
7	LANGK0106GEFW	Earth plate C	Masseplatte C	AB
8	PSLDM4167GEFW	Shield case	Abschirmkasten	AP
10	LANGF7046GEFW	Right angle, Main PWB	Linke Winkelstütze, Hauptleiterplatte	AD
11	LX-LZ1001GEZZ	Push rivet	Druckniete	AA
12	XEBSD30P12000	Screw	Schraube	AA
14	LX-HZ3005GEFD	Screw	Schraube	AA
15	LX-HZ3030GEFF	Screw	Schraube	AA
16	LX-HZ3040GEFF	Screw	Schraube	AA
17	TLABM1462GEZZ	Model label	Modellschild	AB
18	PZETV0265GEZZ	Insulator, power	Isolator, Hauptstrom	AG
20	LANGK0104GEFW	Angle	Winkelstütze	AB
21	LANGK0105GEFW	Angle	Winkelstütze	AC
23	XEBSD40P16000	Screw	Schraube	AA
24	PSLDM4127GEFW	Shield case, frame	Abschirmkasten	AN
25	PSLDM3979GEFW	Shield case, cover	Abschirmkasten	AB
26	XEBSD30P12000	Screw	Schraube	AA
27	LHLDL1072GE00	Holder	Halter	AB
28	XHPSD30P06WS0	Screw	Schraube	AA
29	LANGF7045GEFW	Angle	Winkelstütze	AD
30	LHLDL1033GEZZ	Holder	Halter	AA
31	PSLDM4168GEFW	Shield	Abschirmen	AE
32	PSLDM4169GEFW	Shield	Abschirmen	AE
33	PSPAX0010GEZZ	Spacer	Abstandshalter	AA
34	LHLDW1021GE00	Holder	Halter	AB

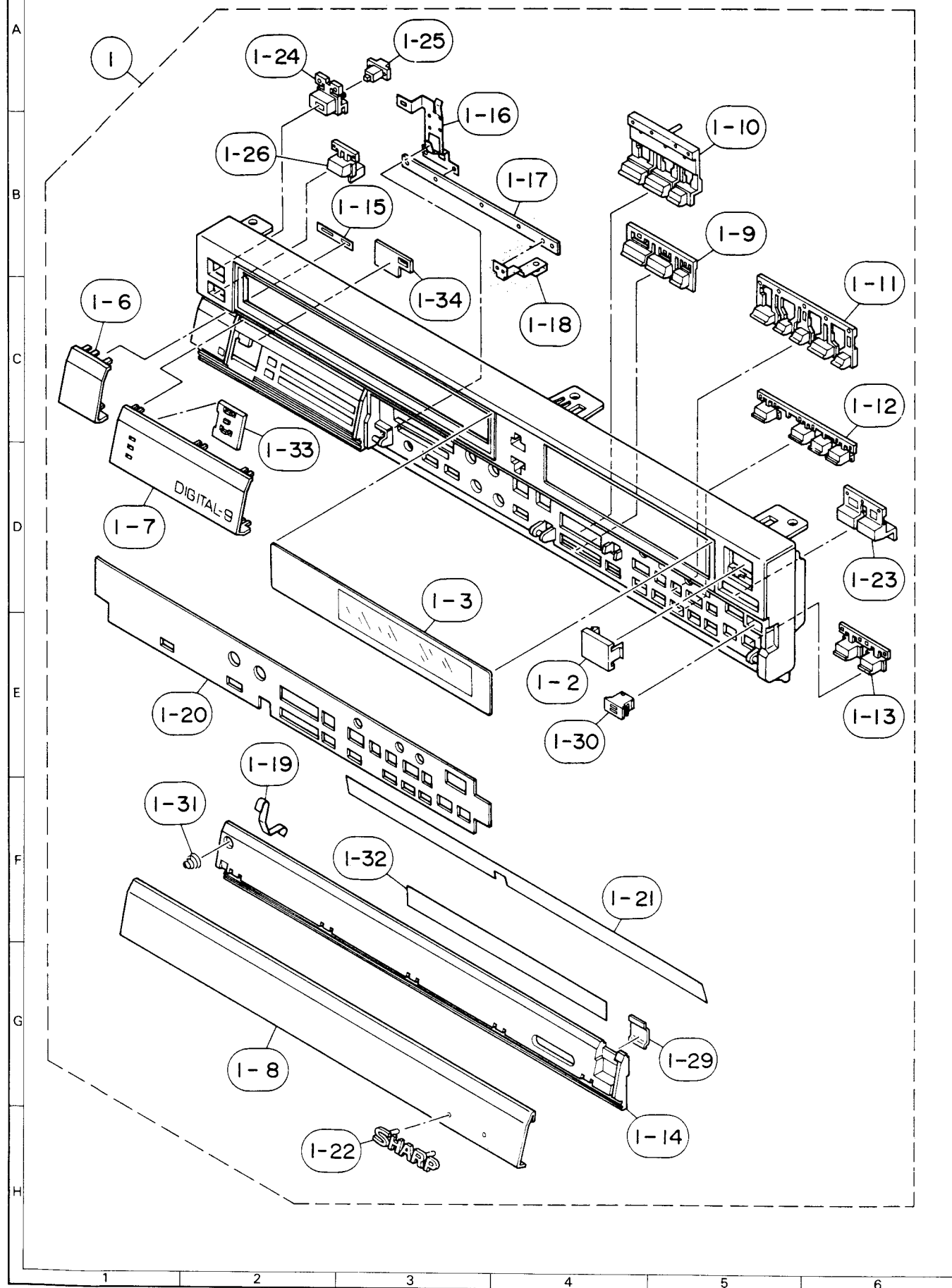
MECHANISM CHASSIS PARTS DIAGRAM DARSTELLUNG DER TEILE DER LAUFWERKCHASSIS



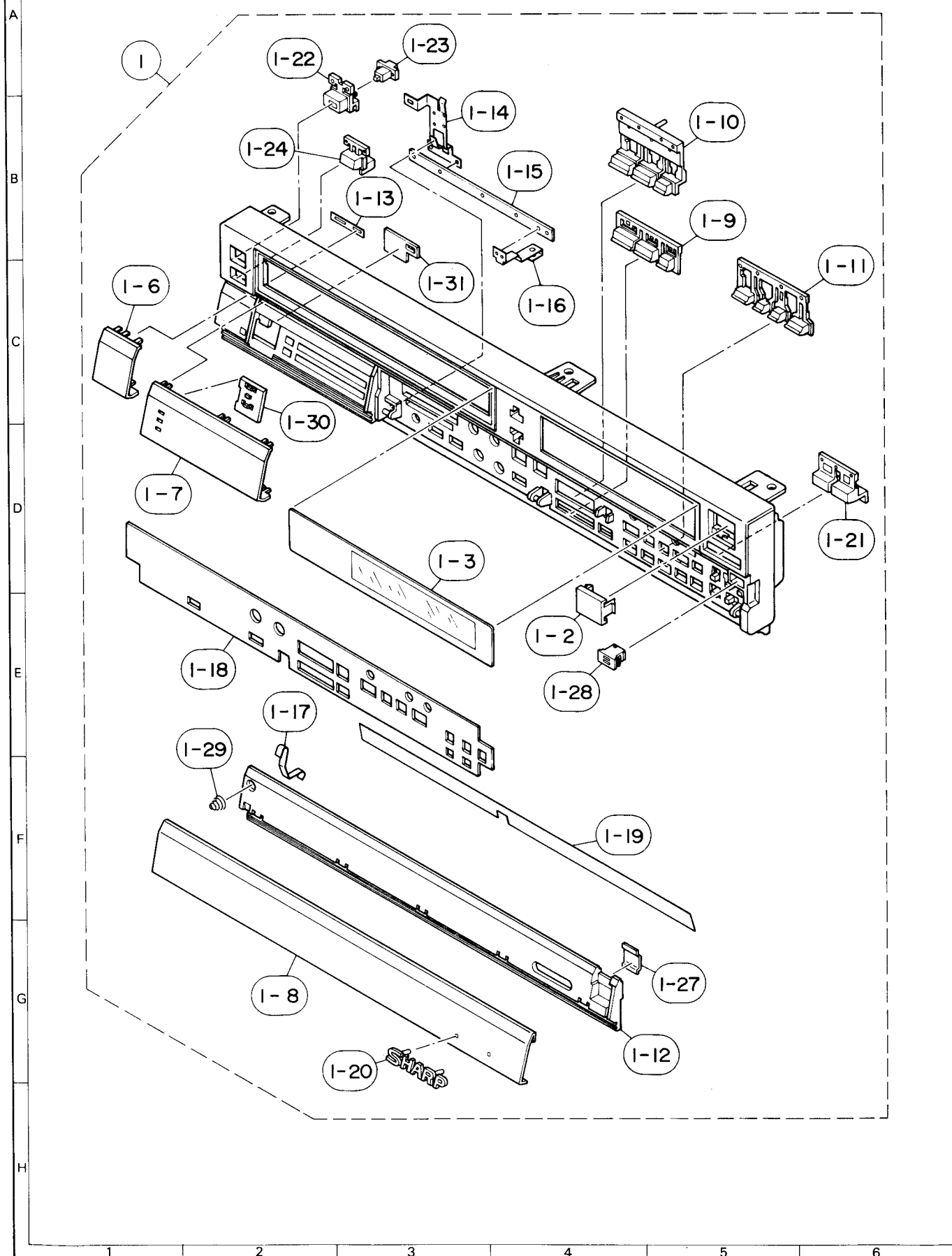
CASSETTE HOUSING CONTROL PARTS DIAGRAM DARSTELLUNG DER CASSETTENGEHÄUSE—REGEL TEILE



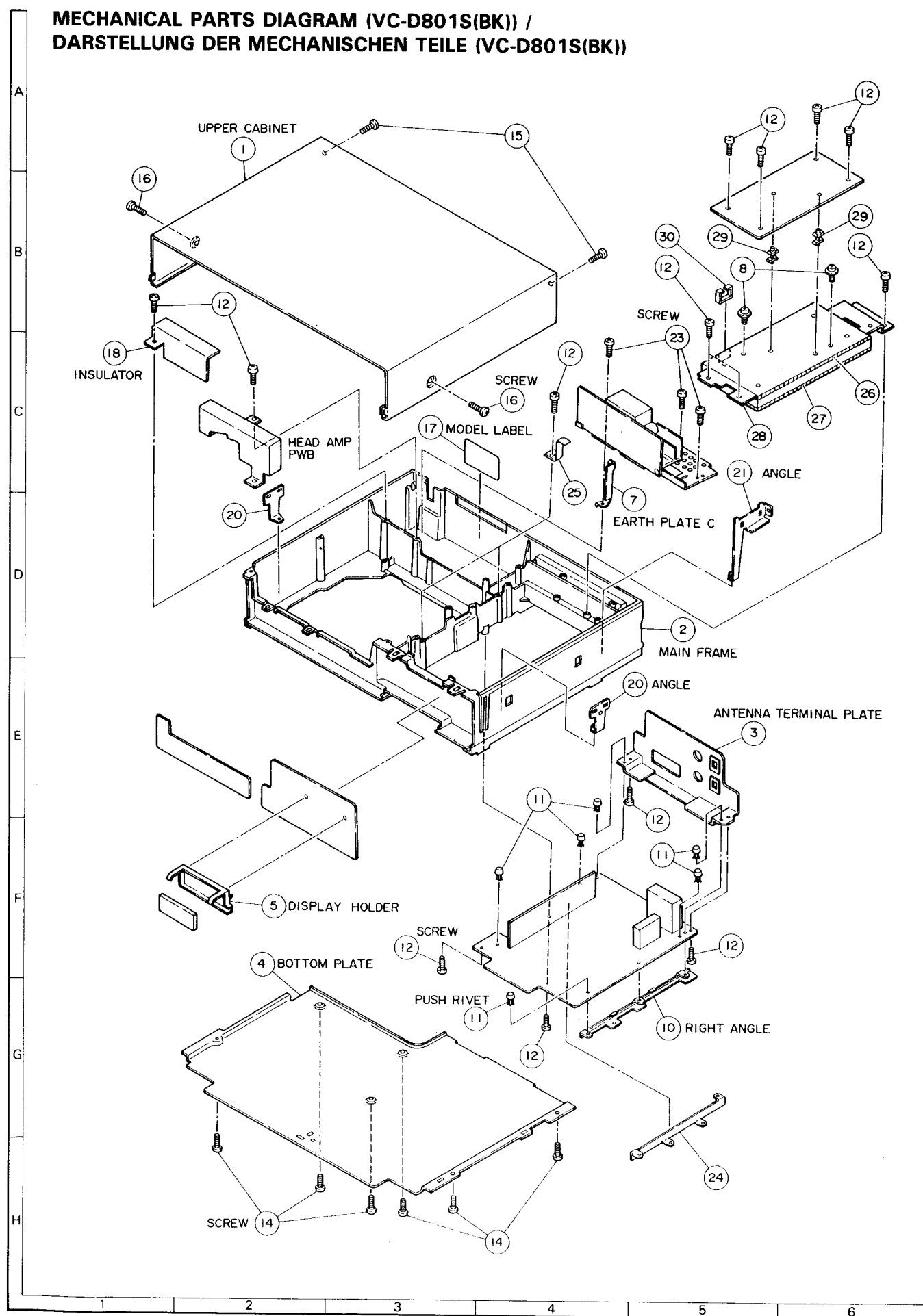
FRONT PARTS (VC-D801S(BK)) /
FRONT TEILE (VC-D801S(BK))



FRONT PARTS (VC-D802G(BK)) /
FRONT TEILE (VC-D802G(BK))



MECHANICAL PARTS DIAGRAM (VC-D801S(BK)) / DARSTELLUNG DER MECHANISCHEN TEILE (VC-D801S(BK))





PACKING OF THE SET (VC-D802G(BK) / VC-D801S(BK)) VERPACKUNG DES GERÄTES (VC-D802G(BK) / VC-D801S(BK))

■ Setting positions of the knobs

Picture tone knob	at "center" position	Bildfarbtonknopf	Mittlere Stellung
Beeper Switch	at "ON" Position	Tonsignalschalter	in Stellung "ON"
Tracking knob	at "center click" Position	Spurlagenknopf	Mittlere Raststellung
Auto Colour Mode Switch	at "Auto" Position	Farb-Betriebsartschalter	in Stellung "OFF"

■ Einstellpositionen der Knöpfe

